U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-289 862

Environmental Requirements and Pollution Tolerance of Plecoptera

Utah Univ, Salt Lake City Dept of Biology

Prepared for

Environmental Monitoring and Support Lab -Cincinnati, OH

Oct 78

United States
Environmental Protection
Agency

Environmental Monitoring and Support
Laboratory
Cincinnati OH 45268

EPA-600/4-78-062
October 1978

Research and Development

PB 289862

EPA

Environmental Requirements and Pollution Tolerance of Plecoptera

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

RESEARCH REPORTING SERIES

Research reports of the Office of Research and Development, U.S. Environmental Protection Agency, have been grouped into nine series. These nine broad categories were established to facilitate further development and application of environmental technology. Elimination of traditional grouping was consciously planned to foster technology transfer and a maximum interface in related fields. The nine series are:

1. Environmental Health Effects Research
2. Environmental Protection Technology
3. Ecological Research
4. Environmental Monitoring
5. Socioeconomic Environmental Studies
6. Scientific and Technical Assessment Reports (STAR)
7. Interagency Energy-Environment Research and Development
8. "Special" Reports
9. Miscellaneous Reports

This report has been assigned to the ENVIRONMENTAL MONITORING series. This series describes research conducted to develop new or improved methods and instrumentation for the identification and quantification of environmental pollutants at the lowest conceivably significant concentrations. It also includes studies to determine the ambient concentrations of pollutants in the environment and/or the variance of pollutants as a function of time or meteorological factors.

This document is available to the public through the National Technical Information Service, Springfield, Virginia 22161.

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO.
EPA-600/4-78-062

2.

3. RECIPIENT'S ACCESSION NO.
PB289862

4. TITLE AND SUBTITLE
ENVIRONMENTAL REQUIREMENTS AND POLLUTION TOLERANCE OF PLECOPTERA

5. REPORT DATE
October 1978 issuing date

6. PERFORMING ORGANIZATION CODE

7. AUTHOR(S)
Rebecca F. Surdick and Arden R. Gaufin

8. PERFORMING ORGANIZATION REPORT NO.

9. PERFORMING ORGANIZATION NAME AND ADDRESS
Department of Biology
University of Utah
Salt Lake City, UT 84112

10. PROGRAM ELEMENT NO.
PE 1BD612

11. CONTRACT/GRANT NO.
R-803537-01

12. SPONSORING AGENCY NAME AND ADDRESS
Environmental Monitoring & Support Lab. - Cinn, OH
Office of Research & Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

13. TYPE OF REPORT AND PERIOD COVERED
Final

14. SPONSORING AGENCY CODE
EPA/600/06

15. SUPPLEMENTARY NOTES

16. ABSTRACT

Environmental requirements associated with 363 North American species of the freshwater insects of the order Plecoptera (stoneflies) were investigated. Profile forms on each species, representing a compilation of information surveyed from selected published sources, indicate the ranges of environmental conditions under which the species has been found. Ecological parameters considered include: pH, nutrients, organic pollution, dissolved oxygen concentration, temperature, turbidity, current and general and specific habitats, seasonal emergence of adults, feeding behavior and geographical distribution. The report is designed to be applicable to water quality investigations and to provide a baseline from which further ecological and systematic research is encouraged.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Indicator Species	Plecoptera	6C
Aquatic Biology	Stoneflies	6F
Water Quality	Nymphs	6T
Environmental Engineering	Pollution Tolerance	
Benthos	Aquatic Insects	
Ecology		
Freshwater		

18. DISTRIBUTION STATEMENT
RELEASE TO PUBLIC

19. SECURITY CLASS (This Report)
UNCLASSIFIED

20. SECURITY CLASS (This page)
UNCLASSIFIED

21. NO. OF PAGES
426

22. PRICE
PC-A19/MF-A01

EPA Form 2220-1 (9-73)

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978—657-060/1514

ATTENTION

AS NOTED IN THE NTIS ANNOUNCEMENT, PORTIONS OF THIS REPORT ARE NOT LEGIBLE. HOWEVER, IT IS THE BEST REPRODUCTION AVAILABLE FROM THE COPY SENT TO NTIS.

EPA-600/4-78-062
October 1978

ENVIRONMENTAL REQUIREMENTS AND POLLUTION TOLERANCE OF PLECOPTERA

by

Rebecca F. Surdick and Arden R. Gaufin
Department of Biology
University of Utah
Salt Lake City, Utah 84112

Grant No. R803537

Project Officer

Donald J. Klemm
Aquatic Biology Section
Environmental Monitoring and Support Laboratory
Cincinnati, Ohio 45268

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
CINCINNATI, OHIO 45268

DISCLAIMER

This report has been reviewed by the Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the U.S. Environmental Protection Agency, nor does mention of trade names or commerical products constitute endorsement or recommendation for use.

FOREWORD

Environmental measurements are required to determine the quality of ambient water, the character of effluents, and the effects of pollutants on aquatic life. The Environmental Monitoring and Support Laboratory - Cincinnati conducts research to develop, evaluate, and promulgate methods to:

- Measure the presence and concentration of physical, chemical, and radiological pollutants in water, wastewater, bottom sediments, and solid waste.
- Concentrate, recover, and identify enteric viruses, bacteria, other microorganisms in water.
- Measure the effects of pollution on freshwater, estuarine, and marine organisms, including the phytoplankton, zooplankton, periphyton, macrophyton, macroinvertebrates, and fish.
- Automate the measurement of physical, chemical, and biological quality of water.
- Conduct an Agency-wide quality assurance program to assure standardization and quality control of systems for monitoring water and wastewater.

The effectiveness of measures taken to protect the biological integrity of the Nation's surface waters is dependent upon our knowledge of the environmental requirements of aquatic organisms and our understanding of the complex relationships that prevail in aquatic ecosystems. This study focuses on an important group of aquatic insects--the Plecoptera (stoneflies). Stonefly nymphs are important components of the benthic fauna in lotic waters, especially in the riffle areas of streams, and a few species occur in lakes. They are generally found in well oxygenated waters, and many species are quite specific in their ecological preference. The nymphs and adults are also important in the diets of many fish species.

This report is the fourth in a series of reports in preparation on the environmental requirements and pollution tolerance of aquatic organisms. Water quality profiles have been developed to serve as companions to the EPA biological methods manual and identification manuals to assist biologists in evaluating data collected during studies concerning the effects of toxic substances and other pollutants on the structure of indigenous communities of aquatic organisms.

Dwight G. Ballinger
Director
Environmental Monitoring and
Support Laboratory - Cincinnati

ABSTRACT

Environmental requirements associated with 363 North American species of the freshwater insects of the order Plecoptera (stoneflies) were investigated. Profile forms on each species, representing a compilation of information surveyed from selected published sources, indicate the ranges of environmental conditions under which the species has been found. Ecological parameters considered include: pH, nutrients, organic pollution, dissolved oxygen concentration, temperature, turbidity, current, general and specific habitats, seasonal emergence of adults, feeding behavior and geographical distribution. The report is designed to be applicable to water quality investigations and to provide a baseline from which further ecological and systematic research is encouraged.

CONTENTS

Foreword iii

Abstract iv

Acknowledgments vi

1. Introduction 1

2. Definitions of Ecological Parameters 5

3. Literature Cited 10

4. Species Included in this Compilation and their Geographical Distribution 14

5. Selected References for Stonefly Ecological Profiles 41

6. Ecological Profiles for 363 Species of Plecoptera 50

ACKNOWLEDGMENTS

Our sincere admiration and gratitude is extended to those scientists who have contributed their research, observations and interest to the field of aquatic ecology, and whose published results are herein surveyed. We are indebted to Ralph Peterson, Dr. George F. Edmunds, Jr., Mrs. Ruth Gaufin and Doug Pifer for their valuable assistance, and to Mrs. Maurine V. Vaughan for manuscript typing.

SECTION 1

INTRODUCTION

The immatures or nymphs of the insect order Plecoptera are an integral part of the benthic fauna of lotic freshwater ecosystems. Because of their usually species specific environmental requirements and tolerance of narrow ranges of fluctuation in environmental conditions, the species composing a community reflect the physical, chemical and biological nature of their environment. Even apparently minor changes may effect compensating alterations in species composition, abundance and distribution.

The intent of this project is to provide a useful source book of information on the ecological parameters associated with various species of Plecoptera. It commenced as a general survey of the literature and represents a compilation of the information into broad categories. The report provides readily accessible profiles of the ranges of environmental conditions under which a species has been found. It also provides a bibliography citing pertinent literature which should be referred to for more explicit information. The report is designed to be applicable to water quality investigations and to provide a baseline from which further ecological and systematic research is encouraged.

The project is necessarily preliminary for two reasons. First, it is not an exhaustive survey of the literature since only major sources were consulted and common species included. Second, the present insufficient knowledge of stonefly ecology and systematics limits such reports to synoptic contributions, communicating the need, possibilities and excitement of continued research.

For the novice, stoneflies in all stages of development are difficult to collect and obscured by drab coloration. Compared to other insects, Plecoptera are infrequently encountered and seldom studied, in spite of their interesting morphology and natural history familiar to their avid students. It is estimated that the order is only about half known, leaving as many species yet to be discovered as already named (Steyskal, 1976).

Systematic studies have emphasized adult taxonomy. Many nymphs are more difficult to collect than adults and must be reared to the adult or obtained pharate in order to accurately determine the species. Adequate taxonomic characters for nymphs are seldom as obvious or as reliable as adult characters and therefore identification keys are few.

Taxonomic literature and early general publications on the order frequently include observations and anecdotes on ecology, life cycles and emergence. Most of the information is accurate and provides the basis of knowledge of plecopteran ecology. Some is superficial and this stimulates continued research.

Ecological research involving stonefly nymphs and adults, and other benthic invertebrates has increased in recent years. However, much additional research is required to more accurately delineate the environmental requirements and ecological parameters of each species. Field studies are essential but complicated by the logistical problems of working with small, aquatic insects. Laboratory studies often entail simulating natural conditions and devising suitable rearing techniques. The perfected artificial environment, however, also provides the opportunity for controlled experiments involving toxic factors and tolerance responses to environmental contaminants and stress. Field investigations on the natural history of the species and benthic community response to altered environmental factors enable the researcher to relate laboratory findings to real situations.

Numerous ecological studies on the environmental requirements of several species of Plecoptera have been conducted at the University of Utah by the second author and colleagues and at various other institutions. Sources providing results of these field and laboratory investigations are included in the profile sheet references.

Several systematic catalogs are available, including comprehensive reviews, revisions and contributions to studies of the world plecopteran fauna. Claassen's catalog of 1940 was the first attempt and the recent publications of Illies (1966) and Zwick (1973) have contributed systematic listings of species, extensive literature surveys and new phylogenetic considerations. The catalogs include species synonymies, distribution records and numerous references to taxonomic and biological information.

Keys to families, genera and often species of adult and immature stoneflies are available in most of the regional publications. The keys are usually limited to the species known to occur in the region covered. Included in this literature are studies on the stoneflies of the following areas: Utah (Gaufin *et al.*, 1966); Montana (Gaufin *et al.*, 1972); California (Jewett, 1956, 1960); Pacific Northwest (Jewett, 1959); Illinois (Frison, 1935, 1942); Texas (Szczytko and Stewart, 1977); Louisiana (Stewart *et al.*, 1976); Pennsylvania (Surdick and Kim, 1976); Minnesota (Harden and Mickel, 1952); and British Columbia (Ricker, 1943; Ricker and Scudder, 1975). Hitchcock's (1974) publication on Connecticut stoneflies includes an extensive review of their biology. Two additional manuscripts covering Rocky Mountain stoneflies (Baumann *et al.*, in press) and Florida stoneflies (Stark and Gaufin, in press) will provide more comprehensive and accurate information on these regions.

Species lists and local distributions within other regions include: Nevada (Cather *et al.*, 1975); Ohio (Gaufin, 1956); Colorado (Stark *et al.*, 1973a,b); New Mexico (Stark *et al.*, 1975); Oklahoma (Stark and Stewart, 1973); Indiana (Ricker, 1945); West Virginia (Farmer and Tarter, 1976; Steele and Tarter, 1977); and Quebec (Ricker *et al.*, 1968). Other taxonomic publications with keys and distributions include the volumes by Needham and

Claassen (1925) and Claassen (1931).

More complete and accurate taxonomic information and keys are available in systematic revisions of families and genera. Those references prior to 1973 are listed in the systematic catalogs. Recent contributions and other useful revisions and keys include the following groups: Leuctridae (Harper and Hynes, 1971b; Ricker and Ross, 1969); Capniidae (Nebeker and Gaufin, 1965, 1967, 1968; Hanson, 1946; Harper and Hynes, 1971a; Ross and Ricker, 1971; Ricker, 1959); Nemouridae (Baumann, 1975; Ricker, 1952; Harper and Hynes, 1971c); Taeniopterygidae (Harper and Hynes, 1971d; Ricker and Ross, 1968, 1975); Peltoperlidae (Ricker, 1952); Pteronarcyidae (Nelson and Hanson, 1971); Perlodidae (Ricker, 1952); Perlidae (Stark and Gaufin, 1976a,b). Revisionary research is presently underway on Isoperlinae by Szczytko and Chloroperlinae by Surdick.

Taxonomic status of species in this publication follows that of Illies (1966) and Zwick (1973). Because of name changes due to systematic revisions and taxonomic rules, species names in the reference do not always agree with the profile forms. However, they refer to the same species and can be checked in the synonymies listed in the catalogs. A species discussed in a reference may actually represent a complex of several species or include an undescribed species. When possible, this is noted on the profiles.

Since species within a genus show differences in environmental requirements, ecological information relating to genera or families is not categorized on the profile forms. Taxonomic literature with only regional or emergence data is also excluded from the profiles, eliminating uncommon species from the report. Profile forms may be completed or added when more information becomes available on each species.

A wide interpretation of the data was necessary in order to categorize the information. Values and ranges reflect the experimental and observational bias of each study. Results vary for populations according to genetic differences, time and locality.

Stonefly nymphs are generally restricted to clean water habitats. Most species inhabit cold, swift water, high in dissolved oxygen content and low in turbidity. Individual species, however, deviate from this generalization. Common, slower water forms are sometimes tolerant of moderate organic loading. Other species inhabit turbid prairie streams, cold-stenothermal high altitude lakes, constant temperature springs or moist seeps. Several species are able to survive in temporary streams because of egg or nymphal diapause or by burrowing to moisture beneath the substrate.

The seasonal presence of nymphs of a species depends on adult emergence time, length of nymphal life, egg diapause or failure of sampling technique. Adults of different species emerge sequentially throughout the year. Occurrence and length of emergence periods vary according to elevation, latitude and constancy of water temperature.

Food selection and specific habitat relates to nymphal development. Some species are known to change from herbivore to carnivore with increasing size and development of mouthparts. Changes in feeding behavior may require a shift in habitat in order to increase food availability. Prior to emergence, nymphs often cease eating and migrate shoreward to await ecdysis.

Literature references include those published up to late Summer, 1977.

SECTION 2

DEFINITIONS OF ECOLOGICAL PARAMETERS

pH -

Acidobiontic - occurring at pH below 5.5.

Acidophilous - occurring between pH 5.5 and 7.0.

Neutral - occurring around pH 7.

Alkaliphilous - occurring at pH between 8.5 and 7.0.

Alkalibiontic - occurring at pH above 8.5.

Indifferent - occurring in both acidic and alkaline waters.

Laboratory research has been conducted on tolerance levels of several stonefly species to hydrogen-ion concentrations. References to these studies and selected results are included in the notes for each species involved.

Nutrient -

Eutrophic - occurring in waters with high nutrient concentrations.

Mesotrophic - occurring in waters with moderate nutrient concentrations.

Oligotrophic - occurring in waters with low nutrient concentrations.

Dystrophic - occurring in waters rich in humic material.

This parameter indicates the relative degree of primary production and therefore reflects the organic and inorganic chemical nature and successional stage of the waters.

Organics -

Saprophilic - occurring in organically polluted waters.

Facultative - occurring in both polluted and clean waters.

Saproxenous - occurring in clean to slightly polluted waters.

Saprophobic - occurring in waters that are not polluted.

These general categories indicate the tolerance of stoneflies to organic loading. Most of the references to organic pollution in the literature state general attributes of the habitat, but do not include chemical measurements. These references are included here, along with results of research and data collected on pollution effects.

O_2 -

Euoxyphilous - occurring in waters with high oxygen concentration (saturated).

Mesoxyphilous - occurring in waters with moderate oxygen concentration.

Oligoxyphilous - occurring in water with low oxygen concentration.

Much of the literature refers to these general categories concerning oxygen requirements of stoneflies. Usually, where values are given in the reference, they still indicate general ranges and are checked in the appropriate category. Data are included in the notes when the research specifically involves oxygen tolerances. The dissolved oxygen concentration tolerated by a stonefly varies according to the temperature of the water. Laboratory research on stonefly respiration include data on temperatures and oxygen concentrations of the experimental environment.

Temperature -

Euthermal - warm-water forms, occurring at temperatures greater than 30°C.

Mesothermal - temperate-water forms, occurring at temperatures between 15°C and 30°C.

Oligothermal - cold-water forms, occurring at temperatures below 15°C.

Stenothermal - occurring over a temperature range of 5°C or less.

Metathermal - occurring over a temperature range of 5°C to 15°C.

Eurythermal - occurring over a temperature range of 15°C or greater.

When the temperature range is great for a species, it is often both Oligothermal and Mesothermal, and both categories are checked. Temperature ranges may vary with latitude and often depend on altitude and nature of the habitat.

Turbidity -

Eulichtophilous - occurring in clear waters.

Mesolichtophilous - occurring in moderately turbid waters.

Polylichtophilous - occurring over a wide range of turbidity.

Oligolichtophilous - occurring in highly turbid waters.

Current -

Limnobiontic - usually occurring in standing waters.

Limnophilous - usually occurring in waters with only a slight current.

Indifferent - occurring in both flowing and standing waters.

Rheophilous - usually occurring in waters with moderate current.

Rheobiontic - usually occurring in waters with a fast current.

When the literature reference lists a species as inhabiting riffles, it is considered Rheobiontic. When it inhabits slower reaches of a stream, it is considered Rheophilous. Few stoneflies inhabit pools, where they would be considered Limnophilous.

General Habitat -

Lake - occurring in large inland bodies of standing waters, usually of sufficient depth to stratify thermally.

Pond - occurring in small inland bodies of standing waters, usually shallow enough for littoral vegetation to extend to the center.

River - occurring in large flowing waters.

Stream - occurring in small flowing waters.

Other - occurring in other types of aquatic habitats.

The Stream category includes spring-fed streams, small streams, large streams and creeks. Springs, spring outlets, temporary streams and intermittent streams are included under Other and specified under notes. When stoneflies inhabit lakes, they are usually cold, clear and high elevation or glacier-melt lakes. Elevations of collections are noted.

Specific Habitat -

Epibenthic - occurring on, but not penetrating the substrate.

Embenthic - occurring in (penetrating) the substrate.

Epipelic - occurring on (or in) mud and silt.

Episabulic - occurring on (or in) sand.

Epilithic - occurring on (or under, or between)rocks or gravel.

Epixylous - occurring on (or in) wood.

Epiphytic - occurring on (or in) plants.

Many stoneflies inhabit leaf packs, trash and debris caught in vegetation and roots, behind stones in the stream or settled in a spring or seep. These species are listed as Epiphytic, and the habitat specified in the notes.

Emergence -

Winter - sexually mature form present in winter (November to early March).

Spring - sexually mature form present in spring (late March to early June).

Summer - sexually mature form present in summer (late June to August).

Autumn - sexually mature form present in autumn (September to early November).

Emergence times vary according to altitude, latitude, weather, habitat and population.

Feeding Behavior -

Predator - feeds on animals (carnivore).

Herbivore - feeds on plants.

Omnivore - feeds on a variety of food.

Scavenger - feeds on non-living organic matter and/or bacteria.

Feeding behavior is listed as referenced. Thus, a known leaf-shredder may be listed as Herbivore according to an older reference. Usually, leaf-shredders are checked as Scavengers. Species feeding on diatoms are Herbivores. Since stoneflies often change feeding behavior with size, age and food availability, two categories, or Omnivore may be checked.

Other Water Chemistry, Toxicity, Misc. -

Field measurements and research on chemical requirements are referred to. Also noted are studies on the toxic responses of stoneflies to various chemicals, including pesticides. Information not fitting in notes for a category is continued here. Numbers in parenthesis indicate literature references.

Geographic Distribution -

Region I - Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont.

Region II - New Jersey, New York.

Region III - Delaware, Maryland, Pennsylvania, Virginia, West Virginia.

Region IV - Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee.

Region V - Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin.

Region VI - Arkansas, Louisiana, New Mexico, Oklahoma, Texas.

Region VII - Iowa, Kansas, Missouri, Nebraska.

Region VIII - Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming.

Region IX - Arizona, California, Nevada.

Region X - Alaska, Idaho, Oregon, Washington.

Region XI - Canada east of Manitoba.

Region XII - Canada west of Manitoba.

The region checked indicates the region discussed in the reference. Actual distribution may not be restricted to the regions checked. Numbers indicate literature references.

SECTION 3

LITERATURE CITED

Baumann, R. W. 1975. Revision of the stonefly family Nemouridae (Plecoptera): A study of the world fauna at the generic level. Smithsonian Contrib. Zool. No. 211, 74 pp.

Baumann, R. W., A. R. Gaufin and R. F. Surdick. 1977. The stoneflies (Plecoptera) of the Rocky Mountains. Mem. Amer. Ent. Soc. 31: 208 pp.

Cather, M. R., B. P. Stark and A. R. Gaufin. 1975. Records of stoneflies (Plecoptera) from Nevada. Great Basin Natur. 35:49-50.

Claassen, P. W. 1931. Plecoptera nymphs of America (North of Mexico). Thomas Say Found. 199 pp.

Claassen, P. W. 1940. A catalogue of the Plecoptera of the world. Mem. Cornell Univ. Agr. Exp. Sta. No. 232, 235 pp.

Farmer, R. G. and D. C. Tarter. 1976. Distribution of the superfamily Nemouroidea in West Virginia (Insecta: Plecoptera). Ent. News 87:17-24.

Frison, T. H. 1935. The stoneflies, or Plecoptera, of Illinois. Bull. Ill. Natur. Hist. Surv. 20:281-471.

Frison, T. H. 1942. Studies of North American Plecoptera with special reference to the fauna of Illinois. Bull. Ill. Natur. Hist. Surv. 22:234-355.

Gaufin, A. R. 1956. An annotated list of the stoneflies of Ohio (Plecoptera). Ohio J. Sci. 56:321-324.

Gaufin, A. R., A. V. Nebeker and J. Sessions. 1966. The stoneflies (Plecoptera) of Utah. Univ. Utah Biol. Ser. 14:1-89.

Gaufin, A. R., W. E. Ricker, M. Miner, P. Milam and R. A. Hays. 1972. The stoneflies (Plecoptera) of Montana. Trans. Amer. Ent. Soc. 98:1-161.

Hanson, J. F. 1946. Comparative morphology and taxonomy of the Capniidae (Plecoptera). Amer. Midl. Natur. 35:193-249.

Harden, P. H. and C. E. Mickel. 1952. The stoneflies of Minnesota (Plecoptera). Univ. Minn. Agr. Exp. Sta. Tech. Bull. 201, 84 pp.

Harper, P. P. and H. B. N. Hynes. 1971a. The Capniidae of Eastern Canada (Insecta: Plecoptera). Canad. J. Zool. 49:921-940.

Harper, P. P. and H. B. N. Hynes. 1971b. The Leuctridae of Eastern Canada (Insecta: Plecoptera). Canad. J. Zool. 49:915-920.

Harper, P. P. and H. B. N. Hynes. 1971c. The nymphs of the Nemouridae of Eastern Canada (Insecta: Plecoptera). Canad. J. Zool. 49:1129-1142.

Harper, P. P. and H. B. N. Hynes. 1971d. The nymphs of the Taeniopterygidae of Eastern Canada (Insecta: Plecoptera). Canad. J. Zool. 49: 941-947.

Hitchcock, S. W. 1974. The Plecoptera or stoneflies of Connecticut. Part VII. Guide to the insects of Connecticut. St. Geol. and Natur. Hist. Surv. Conn. Bull. 107, 262 pp.

Illies, J. 1966. Katalog der rezenten Plecoptera. Das Tierreich. 82: 1-632.

Jewett, S. G., Jr. 1956. Plecoptera. In: Usinger, R. L. Aquatic insects of California. Univ. Calif. Press. p. 155-181.

Jewett, S. G., Jr. 1959. The stoneflies (Plecoptera) of the Pacific Northwest. Ore. St. Coll. Press. 95 pp.

Jewett, S. G., Jr. 1960. The stoneflies (Plecoptera) of California. Bull. Calif. Insect. Surv. 6:123-177.

Nebeker, A. V. and A. R. Gaufin. 1965. The *Capnia columbiana* complex of North America (Capniidae: Plecoptera). Trans. Amer. Ent. Soc. 91: 467-487.

Nebeker, A. V. and A. R. Gaufin. 1967. New *Capnia* from the Rocky Mountains (Plecoptera, Capniidae). Trans. Amer. Ent. Soc. 93:235-247.

Nebeker, A. V. and A. R. Gaufin. 1968. The winter stoneflies of the Rocky Mountains (Plecoptera, Capniidae). Trans. Amer. Ent. Soc. 94:1-24.

Needham, J. G. and P. W. Claassen. 1925. A monograph of the Plecoptera or stoneflies of America North of Mexico. Thomas Say Found. 397 pp.

Nelson, C. H. and J. F. Hanson. 1971. Contribution to the anatomy and phylogeny of the family Pteronarcidae (Plecoptera). Trans. Amer. Ent. Soc. 97:123-200.

Ricker, W. E. 1943. Stoneflies of Southwestern British Columbia. Ind. Univ. Publ. Sci. Ser. 145 pp.

Ricker, W. E. 1945. A first list of Indiana stoneflies (Plecoptera). Proc. Ind. Acad. Sci. 54:225-230.

Ricker, W. E. 1952. Systematic studies in Plecoptera. Ind. Univ. Publ. Sci. Ser. No. 18, 200 pp.

Ricker, W. E. 1959. The species of *Isocapnia* Banks (Insecta, Plecoptera, Nemouridae). Canad. J. Zool. 37:639-653.

Ricker, W. E. and H. H. Ross. 1968. North American species of *Taeniopteryx* (Plecoptera, Insecta). J. Fish. Res. Bd. Can. 25:1423-1439.

Ricker, W. E. and H. H. Ross. 1969. The genus *Zealeuctra* and its position in the family Leuctridae (Plecoptera, Insecta). Canad. J. Zool. 47:1113-1127.

Ricker, W. E. and H. H. Ross. 1975. Synopsis of the Brachypterinae (Insecta: Plecoptera: Taeniopterygidae). Canad. J. Zool. 53:132-153.

Ricker, W. E. and G. G. E. Scudder. 1975. An annotated checklist of the Plecoptera (Insecta) of British Columbia. Syesis 8:333-348.

Ricker, W. E., R. Malouin, P. Harper and H. H. Ross. 1968. Distribution of Quebec stoneflies (Plecoptera). Natur. Canad. 95:1085-1123.

Ross, H. H. and W. E. Ricker. 1971. The classification, ecology and dispersal of the winter stonefly genus *Allocapnia*. Ill. Biol. Monogr. No. 45, 166 pp.

Stark, B. P. and A. R. Gaufin. 1976a. The Nearctic genera of Perlidae (Plecoptera). Ent. Soc. Amer. Misc. Publ. 10:1-80.

Stark, B. P. and A. R. Gaufin. 1976b. The Nearctic species of *Acroneuria*. J. Kans. Ent. Soc. 49:221-253.

Stark, B. P. and A. R. Gaufin. In press. The stoneflies of Florida.

Stark, B. P. and K. W. Stewart. 1973. Distribution of stoneflies (Plecoptera) in Oklahoma. J. Kans. Ent. Soc. 46:563-577.

Stark, B. P., B. R. Oblad and A. R. Gaufin. 1973a. An annotated list of the stoneflies (Plecoptera) of Colorado. Part I. Ent. News. 84:269-277.

Stark, B. P., B. R. Oblad and A. R. Gaufin. 1973b. An annotated list of the stoneflies (Plecoptera) of Colorado. Part II. Ent. News. 84:301-305.

Stark, B. P., T. A. Wolff and A. R. Gaufin. 1975. New records of stoneflies (Plecoptera) from New Mexico. Great Basin Natur. 35:97-99.

Steele, B. D. and D. C. Tarter. 1977. Distribution of the family Perlidae in West Virginia (Plecoptera). Ent. News 88:18-22.

Stewart, K. W., B. P. Stark and T. G. Huggins. 1976. The stoneflies (Plecoptera) of Louisiana. Great Basin Natur. 36:366-384.

Steyskal, G. C. 1976. Notes on the nomenclature and taxonomic growth of the Plecoptera. In: Baumann, R. W. A report on the Fifth International Symposium on Plecoptera. Proc. Biol. Soc. Washington 88:399-428.

Surdick, R. F. and K. C. Kim. 1976. Stoneflies (Plecoptera) of Pennsylvania. Penn. St. Univ. Agr. Exp. Sta. Bull. 808, 73 pp.

Szczytko, S. W. and K. W. Stewart. 1977. The stoneflies (Plecoptera) of Texas. Trans. Amer. Ent. Soc. 103:327-378.

Zwick, P. W. 1973. Insecta; Plecoptera, phylogenetisches system und katalog. Das Tierreich. 94:1-465.

SECTION 4

SPECIES INCLUDED IN THIS COMPILATION

GEOGRAPHICAL DISTRIBUTION[*]

---

[*] Numbers under regions indicate literature references. See definition of parameter.

SPECIES	REGION											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
NEMOURIDAE												
Amphinemura banksi Baumann & Gaufin 1972								112				
A. delosa (Ricker) 1952	96,104, 113	96,103, 104	96,104	59,96, 104	61,77,96, 101,104		75				39,83,105	
A. linda (Ricker) 1952					39						39,105	
A. nigritta (Provancher) 1876	113			94,114	30						39,105	
A. varshava (Ricker) 1952	113											
A. venusta (Banks) 1911								98,104, 109,111				
A. wui (Claassen) 1936		103,104		104							41,105	
Lednia tumana (Ricker) 1952								112				
Malenka bifurcata (Claassen) 1923										102		
M. biloba (Claassen) 1923									76,100, 104			
M. californica (Claassen) 1923								2,64,104, 109,111, 112	80,100, 102,104	102,104, 122		72
M. coloradensis (Banks) 1897								54,55,103, 104,109, 111,112				
M. cornuta (Claassen) 1923										102,122		72,104, 110
M. depressa (Banks) 1898									100,102 104	102,104		

SPECIES	REGION											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
M. flexura (Claassen) 1923									104,111, 112	102,111		
M. marionae (Hitchcock) 1958									100			
M. perplexa (Frison) 1936										102		
M. tina (Ricker) 1952								112		102		
Nemoura trispinosa Claassen 1923	113	96,104			96						39,83,105	
Ostrocerca albidipennis (Walker) 1852	104	104									83,105	
O. dimicki (Frison) 1936										102		72,110
O. foersteri (Ricker) 1943										102,122		110
O. prolongata (Claassen) 1923	104										105	
O. truncata (Claassen) 1923	104,113											
Paranemoura perfecta (Walker) 1852	113										41,83,105, 113	
Podmosta decepta (Frison) 1942								109,112		23,102		110
P. delicatula (Claassen) 1923						85		98,104, 109,112	80,100, 102	102		110
P. obscura (Frison) 1936										102,122		
Prostoia besametsa (Ricker) 1952						85		54,64,108, 109,111, 112	80,100, 102	102		70
P. completa (Walker) 1852	98				98						39,105	

SPECIES	REGION I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
P. *similis* (Hagen) 1861			104		61,77						105	
Shipsa rotunda (Claassen) 1923	96,104				77,96						39,105	
Soyedina interrupta (Claassen) 1923								112	80	102,104, 122		72
S. *nevadensis* (Claassen) 1923									100			
S. *producta* (Claassen) 1923									80,100	102,122		72,110
S. *vallicularia* (Wu) 1923	104,105	103,104		59,104							39,105	
S. *washingtoni* (Claassen) 1923	104			104								
Visoka cataractae (Neave) 1933								112	100,102	102		72,110
Zapada cinctipes (Banks) 1897						85		4,8,36,38, 54,55,64, 102,104, 108,109, 111,112	38,80,100, 102,104	23,102, 104,122		13,70,72, 110
Z. *columbiana* (Claassen) 1923								2,8,64, 102,108, 111,112	80,100, 102	102,111		70,72, 104,110
Z. *cordillera* (Baumann & Gaufin) 1971								112				
Z. *frigida* (Claassen) 1923						85		112	80,100, 102	23,102, 104,122		110
Z. *glacier* (Baumann & Gaufin) 1971								112				
Z. *haysi* (Ricker) 1952						85		1,8,64, 102,109, 111,112	100,102	102		

SPECIES	REGION											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Z. oregonensis (Claassen) 1923								54,55, 109,111, 112	80,100, 102	23,102, 104,122		70,72 110
TAENIOPTERYGIDAE												
Doddsia occidentalis (Banks) 1900								98,102, 104,108, 111,112	100,102	23,102, 104		72,110
Oemopteryx contorta (Needham & Claassen) 1925	104											
O. fosketti (Ricker) 1965								109,111				
O. glacialis (Newport) 1848	96	96			96							
Strophopteryx fasciata (Burmeister) 1839	96,104	96,104	96,103, 104	94,96 104	28,96,99, 101,103, 104	90	75,96 104				42	
S. ostra Ricker & Ross 1975						114						
Taenionema californicum (Needham & Claassen) 1925									100,103 104			
T. grinnelli (Banks) 1918									100,104			
T. nigripenne (Banks) 1918						85		36,64,102, 109,111, 112	100,102	69,102, 122		72,110
T. oregonense (Needham & Claassen) 1925										102,104		
T. pacificum (Banks) 1900								29,54,98, 102,104, 108,109, 111,112	100,102	55,102, 104		72,110

SPECIES	REGION											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
T. pallidum (Banks) 1902								54,55,102,104,111,112	100,102	69,102,110		110
T. raynorium (Claassen) 1937									80,100			
T. vanduzeeum (Claassen) 1937									100			
Taeniopteryx burksi Ricker & Ross 1968	104,113	104	104	94,104	25,99,101,104	87,114 115					42	
T. lita Frison 1942						87,114,115						
T. lonicera Ricker & Ross 1968						114,115						
T. maura (Pictet) 1841	104,113	103,104	14,15,16,77,103,104	90,104	5,6,28,30,68,77,103,104	114,115	75					
T. nivalis (Fitch) 1847	104	103,104	77,103,104	104	61,77,103,104		75		100,102	102	42	13
T. parvula Banks 1918	96,99,104	96,99,104	96,99,103,104	94	77,96,99,101,104							
T. starki Stewart & Szczytko 1974						114						
CAPNIIDAE												
Allocapnia aurora Ricker 1952			97	97								
A. brooksi Ross 1964				97								
A. cunninghami Ross & Ricker 1971				97								

SPECIES	REGION I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
A. *curiosa* Frison 1942		97	97	97								
A. *forbesi* Frison 1929			97	94	30,97,99, 101							
A. *frisoni* Ross & Ricker 1964		97	97	97	97	114						
A. *fumosa* Ross 1964				97								
A. *granulata* (Claassen) 1924	113	97,98, 104	97,98, 104	97	25,28,68, 97,98,99, 101,104	87,97 114,115					42	
A. *illinoensis* Frison 1935	97	97			61,97, 101,106							
A. *indianae* Ricker 1952	113	97		97	97							
A. *jeanae* Ross 1964						97						
A. *loshada* Ricker 1952			97	97								
A. *malverna* Ross 1964						97,114						
A. *maria* Hanson 1942		97	97									
A. *minima* (Newport) 1851	97,98,104	97,98,104			97,98,104						106	
A. *mohri* Ross & Ricker 1964						97	97					
A. *mystica* Frison 1929	113		97	97	97,99,101, 103	97						
A. *nivicola* (Fitch) 1847		97	97	97	28,61,97						42,106	
A. *ohioensis* Ross & Ricker 1964		97	97	97	97							
A. *ozarkana* Ross 1964						97						
A. *pechumani* Ross & Ricker 1964		97									106	

	REGION											
SPECIES	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
A. peltoides Ross & Ricker 1964						97						
A. perplexa Ross & Ricker 1971				97								
A. polemistis Ross & Ricker 1971				97								
A. pygmaea (Burmeister) 1839	97,98,99, 104	97,98,99, 104	97,98,99, 104	97,98	12,61,97, 98,99,101						42,83, 106	
A. recta (Claassen) 1924	97,99, 104,113	97,99, 103,104	97	97	25,28,97, 99,101, 103						42,106	
A. rickeri Frison 1942		97	97	59,97	25,61,97	97					42,106	
A. sandersoni Ricker 1952						97	97					
A. stannardi Ross 1964				97								
A. tennessa Ross & Ricker 1964				97								
A. unzickeri Ross & Yamamoto 1966				97								
A. virginiana Frison 1942			97	97								
A. vivipara (Claassen) 1924	113	97,98, 104	97,98	94,97,98	25,28,30, 31,32,61, 97,98,99, 101,103, 104	97,98	97,98 104				42,106	
A. warreni Ross & Yamamoto 1966						97						
A. wrayi Ross 1964			97	97								

SPECIES	REGION I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
A. zekia Ross 1964			97									
A. zola Ricker 1952	97,113	97	97	97	97							
Bolshecapnia milami (Nebeker & Gaufin) 1967								112				
B. sasquatchi (Ricker) 1965								112				
B. spenceri (Ricker) 1965								112				
C. barberi Claassen 1924									80,100, 104			
C. californica Claassen 1924									100,104			
C. coloradensis Claassen 1937								54,55,109, 112				
C. confusa Claassen 1936						85		64,102, 108,109, 111,112		102		110
C. cygna Jewett 1954										102		
C. decepta (Banks) 1897								104				
C. elevata Frison 1942										102		
C. elongata Claassen 1924								111,112	100,102, 104	102,111		110
C. erecta Jewett 1955									102			
C. excavata Claassen 1924									100,102 104	23,102 122		72,110
C. fibula Claassen 1924									104			
C. glabra Claassen 1924								111	80,100, 102,104	102		

SPECIES	REGION I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
C. *gracilaria* Claassen 1924						85		54,64,109, 111,112	100	102		72,104, 110
C. *jewetti* Frison 1942										102		
C. *lacustra* Jewett 1965									46			
C. *licina* Jewett 1954										102		
C. *ligulata* Hanson 1943								111				
C. *limata* Frison 1944								54,55,109, 111,112				
C. *lineata* Hanson 1943									100,102	102		
C. *maculata* Jewett 1954									100			
C. *manitoba* Claassen 1924	113										42,104, 106	
C. *melia* Frison 1942										23,102		110
C. *nana* Claassen 1924								2,64,67, 102,111, 112		23,67,102		67,104
C. *nearctica* Banks 1918										104		104
C. *oregona* Frison 1942										102		
C. *petila* Jewett 1954								112		102		
C. *promota* Frison 1937									100,102	102		
C. *quadrituberosa* Hitchcock 1958									100			
C. *scobina* Jewett 1966									80			

	REGION										
SPECIES	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
C. sextuberculata Jewett 1954								112		102		
C. teresa Claassen 1924									100,104			
C. tumida Claassen 1924									100,102, 104	102		
C. uintahi Gaufin 1964								111				
C. umpqua Frison 1942									100,102	102		
C. utahensis Gaufin & Jewett 1962								111				
C. venosa (Banks) 1900										102,104		
C. vernalis Newport 1848		103,104			96,99,101							
C. wanica Frison 1944								111				
C. willametta Jewett 1955										102		
C. zukeli Hanson 1943										102		
Eucapnopsis brevicauda Claassen 1924						85		54,55,64, 98,102, 104,108, 109,111, 112	80,100, 102	102,122		72,110
Isocapnia abbreviata Frison 1942									100,102	102		
I. agassizi Ricker 1943										102		110
I. crinita (Needham & Claassen) 1925								54,55,84, 104,108, 111,112				

SPECIES	REGION											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
I. grandis (Banks) 1907								84,108, 111,112	100,102	102		72,104, 110
I. hyalita Ricker 1959								112				
I. missourii Ricker 1959								84,108, 111,112				
I. spenceri Ricker 1943									100,102	102		110
I. vedderensis (Ricker) 1943								102,108, 111,112		111		110
Mesocapnia oenone (Neave) 1929								102,112				72,110
M. porrecta (Jewett) 1954									100	102,122		102
M. projecta (Frison) 1937								111,112	102	102		110
Paracapnia angulata Hanson 1961					61			109			42,61	
P. opis (Newman) 1839	96,113	96	96	96	96						106	
Utacapnia columbiana (Claassen) 1924								108,112	100	72		72,104, 110
U. distincta (Frison) 1937								112				
U. lemoniana (Nebeker & Gaufin) 1965								109,111				
U. logana (Nebeker & Gaufin) 1965								54,55,64, 109,111				
U. poda (Nebeker & Gaufin) 1965								54,55,109, 112				

SPECIES	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
						REGION						
U. sierra (Nebeker & Gaufin) 1965									80			
U. trava (Nebeker & Gaufin) 1965									108,112			
LEUCTRIDAE												
Desparia augusta (Banks) 1907								112	100,102	23,102, 122		72,104, 110
Leuctra biloba Claassen 1923				104							83	
L. carolinensis Claassen 1923				104								
L. divisa Hitchcock 1958									100			
L. duplicata Claassen 1923	104,113	104									41,83, 107	
L. ferruginea (Walker) 1852	96,113	96,103, 104	96	96	77,96						39,41,74, 83	
L. grandis Banks 1906				104								
L. maria Hanson 1941									107			
L. sibleyi Claassen 1923		103,104		59	61						41,83, 107	
L. tenella Provancher 1876	96,104	96,104			96						41,74,83, 107	
L. tenuis (Pictet) 1841	96,113	96,104	96,104	96	96						39,41,74, 83,107	
L. triloba Claassen 1923		104		104								

SPECIES	REGION I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
L. truncata Claassen 1923		104										
L. variabilis Hanson 1941	113										41,107	
Megaleuctra complicata Claassen 1937										102		
M. kincaidi Frison 1942										102		
M. stigmata (Banks) 1900								112				104
Moselia infuscata (Claassen) 1923									100,102, 104	102,104 122		72,110
Paraleuctra forcipata (Frison) 1937								108,112	100,102	102,122		
P. jewetti Nebeker & Gaufin 1966								66,112		66		
P. occidentalis (Banks) 1907								64,66,98, 102,108, 109,111, 112	80,100, 102,104	23,66, 102,104, 111,122		72,104, 110
P. purcellana (Neave) 1934								112		102		
P. rickeri Nebeker & Gaufin 1966								66,112		66		
P. sara (Claassen) 1937				90				54,111, 112,122	80,100 102	23,102, 122	83,107	
P. vershina Gaufin & Ricker 1974						85		108				
Perlomyia collaris Banks 1906								112	100,102	102,122		72,104, 110

SPECIES	I	II	III	IV	V	REGION VI	VII	VIII	IX	X	XI	XII
P. utahensis Needham & Claassen 1925								2,64,104, 111,112		102,122		72,110
Zealeuctra arnoldi Ricker & Ross 1969						114						
Z. claasseni (Frison) 1929	113				101,103	114	75					
Z. hitei Ricker & Ross 1969						114						
Z. narfi Ricker & Ross 1969					61							
PELTOPERLIDAE												
Peltoperla arcuata Needham 1905		24,103, 104	104									
P. maria Needham & Smith 1916	104,113	104		19,24,90, 91,95,104								
Sierraperla cora (Needham & Smith) 1916									104			
Soliperla campanula (Jewett) 1954										102		
S. fenderi (Jewett) 1955										102		
S. quadrispinula (Jewett) 1954									100,102	100,102, 122		
S. thyra (Needham & Smith) 1916									100,104			
Yoraperla brevis (Banks) 1907								100,112	80,100, 102,104	11,65, 100,102, 104,122		72,110
Y. mariana (Ricker) 1943								112		102		110

SPECIES	REGION											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
PTERONARCYIDAE												
Allonarcys biloba (Newman) 1838	103,104	103,104	89,103, 104	103,104								
A. cometoki (Smith) 1917		104	89									
A. proteus (Newman) 1838	44,104, 113	103,104	89,103								58	
A. scotti (Ricker) 1952	113			90								
Pteronarcella badia (Hagen) 1874						85		4,20,26, 29,34,36, 54,55,71, 98,103, 104,108, 109,111, 112,117, 118	104	104		
P. regularis (Hagen) 1874								103,112	80,100, 102	102,104 122		
Pteronarcys californica Newport 1851						102,103, 104		4,15,20, 22,29,30, 33,34,36, 37,54,55, 56,71,102, 103,104, 108,109, 111,112, 116,117, 118,119, 121	100,102 103,104	20,102 104		72,110
P. dorsata (Say) 1823	96,104, 113	96,104	89,96, 104	104	5,6,68,77, 96,124	87	96				74	
P. pictetii Hagen 1873		96,104	96,104	96,104	18,77,96, 101,104		96,104					

SPECIES	REGION I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
P. princeps Banks 1907								111	100,102, 103,104	102,104, 122		72,110
PERLODIDAE												
Arcynopteryx compacta (McLachlan) 1872	104,113	104						112				
Calliperla luctuosa (Banks) 1906									100,102, 104	102,104, 122		
Chernokrilus erratus (Claassen) 1936									100,104			
C. misnomus (Claassen) 1936										102,104, 122		
Cultus aestivalis (Needham & Claassen) 1925								26,34,35, 54,55,102, 103,104, 109,111, 112,117, 118				110
C. decisus (Walker) 1852	104,113	103		104	104	59,60						
C. pilatus (Frison) 1942								112		102		110
C. tostonus (Ricker) 1952								102,108, 112	100,102	102		
Diploperla duplicata (Banks) 1920		104	104	104	28,101		75					
Diura knowltoni (Frison) 1937						85		36,54,55, 102,108, 109,111, 112	79,80	102		
Frisonia picticeps (Hanson) 1942									79,80	102		110

SPECIES	REGION											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Helopicus subvarians (Banks) 1920		104	104	86							41,83	
Hydroperla crosbyi (Needham & Claassen) 1925	113				101	114,115	75,104					
H. fugitans (Needham & Claassen) 1925					101	104						
Isogenoides colubrinus (Hagen) 1874								102,108, 109,111, 112		102,104		
I. elongatus (Hagen) 1874								54,55,71, 98,102, 104,109, 111,112		102		
I. frontalis (Newman) 1838		96			3,5,6,56, 68,77,96							
I. olivaceus (Walker) 1852					3							
I. varians (Walsh) 1862					96,101, 104		104					
I. zionensis Hanson 1949						85		26,111				
Isoperla bellona Banks 1911				104								
I. bilineata (Say) 1823	113	103,104		96	3,28,77, 96,101, 104		75					
I. burksi Frison 1942				94								
I. clio (Newman) 1839	113			59,60,94, 104	3,28,77, 101,103, 104	115						

SPECIES	I	II	III	IV	V	REGION VI	VII	VIII	IX	X	XI	XII
I. cotta Ricker 1952					3,61,77						40,41	
I. coushatta Szczytko & Stewart 1976						87						
I. decepta Frison 1935					12,28,101							
I. denningi Jewett 1955									100			
I. dicala Frison 1942				96	3,61,77, 96		96				41	
I. ebria (Hagen) 1874						85		1,98,102 103,104, 111,112	100,102	102,104, 122		110
I. frisoni Illies 1966					3,77,96						40,41,83	
I. fulva Claassen 1937						85		26,36,37, 54,55,71, 102,108, 109,111, 112	100,102	102		72,110
I. fusca Needham & Claassen 1925								112		102		104
I. gravitans (Needham & Claassen) 1925										102,104		
I. lata Frison 1942				96	3,96							
I. longiseta Banks 1906					96,104	96	96,104	96,102, 109,111, 112				110
I. marlynia Needham & Claassen 1925	96	96,104	96		3,96		75					
I. marmorata (Needham & Claassen) 1925									80,100, 102,104, 79	102,122		

SPECIES	REGION											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
I. maxana Harden & Mickel 1952					96							
I. mohri Frison 1935					101	87	75					
I. montana (Banks) 1898	96,104	96,104			96,104						83	
I. mormona Banks 1920								30,54,55, 102,104, 111,112	100,102	102,122		110
I. nana (Walsh) 1862	113			94	3,28,101, 104							
I. orata Frison 1942	96	96	96	96	28,96						41	
I. patricia Frison 1942								54,55,92, 102,108, 109,111, 112	100	102		
I. petersoni Needham & Christenson 1927								38,103, 111,112				110
I. phalerata (Smith) 1917						104						
I. pinta Frison 1937								54,55,109, 111,112	100,102	102,111		72,110
I. quinquepunctata (Banks) 1902						103,104		98,103, 104,109, 111	103,104			
I. rainiera Jewett 1954										102		
I. richardsoni Frison 1935	96,113				3,96,101		75					
I. sagittata Szczytko & Stewart 1976						114						
I. signata (Banks) 1902	96,113	96,103, 104			3,28,77, 96							

	REGION											
SPECIES	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
I. similis (Hagen) 1861	104	103,104	104									
I. slossonae (Banks) 1911	96,104	96			3,77,96							
I. sordida Banks 1906								112	100,102	102,122		
I. transmarina Newman 1838	113	96			3,28,77, 96						40,41,83, 104	
I. trictura (Hoppe) 1938								112	100,102	102,122		110
Kogotus alameda (Needham & Claassen) 1925									100,104			
K. modestus (Banks) 1908						102,104		1,54,55, 98,102, 104,108, 111,112	104			
K. nonus (Needham & Claassen) 1925								112	80,100, 102	102,104, 122		72,110
Malirekus hastatus (Banks) 1920	103	103,104										
Megarcys irregularis (Banks) 1900										102,104		110
M. signata (Hagen) 1874						85,102		1,4,10,54, 71,98,102, 103,109, 111,112		102		72
M. subtruncata Hanson 1942								10,112		102,104		72,110
M. watertoni (Ricker) 1952								102,112				102
M. yosemite (Needham & Claassen) 1925									100,102, 104	102		
Oroperla barbara Needham 1933									79,100			

SPECIES	REGION											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Osobenus yakimae (Hoppe) 1938									100			
Perlinodes aureus (Smith) 1917								36,112	80,100, 102,104	102		79
Pictetiella expansa (Banks) 1920								98,103, 104,111, 112				
Remenus bilobatus (Needham & Claassen) 1925		103,104				104						
Rickera sorpta (Needham & Claassen) 1925									79,100, 102,104	102		
Setvena bradleyi (Smith) 1917								102,112		102		104
S. tibialis (Banks) 1914										102,103, 104		
Skwala curvata (Hanson) 1942								10,102, 112	79,80,100	102		110
S. parallela (Frison) 1936								10,26,29, 36,54,55, 71,102, 104,108, 111,112	100,102	102		72,110
Yugus bulbosus (Frison) 1942				95								
PERLIDAE												
Acroneuria abnormis (Newman) 1838	96,113	96,103, 104	89,96, 103,104	86,90,96, 104	96,101					41,83	41,83	
A. arenosa (Pictet) 1841	104	103,104	103,104	104,86	87,114							

SPECIES	I	II	III	IV	V	REGION VI	VII	VIII	IX	X	XI	XII
A. arida (Hagen) 1861		104	104	94,95, 104	101,104	104	75					
A. carolinensis (Banks) 1905			89	104								
A. evoluta Klapalek 1909			89		28,104	104	104					
A. internata (Walker) 1852	96	96	89,96, 104	96	96,101, 104							
A. lycorias (Newman) 1839	104,113	103,104	14,16, 89,104		5,6,61, 68,77,104		104				41,83	
A. mela Frison 1942						114,115						
A. perplexa Frison 1937			89									
Atoperla ephyre (Newman) 1839	104,113	96,104	96,104	96,104	96,101, 103	96,104						
Attaneuria ruralis (Hagen) 1861	113	104	96,104	96,104	96,101, 104		96,103, 104	104				
Beloneuria georgiana (Banks) 1914				104								
Calineuria californica (Banks) 1905								112	43,78,80, 81,82, 100,102, 103	11,102, 103,122		72
Claassenia sabulosa (Banks) 1900						85,102		4,26,54, 55,71,102, 104,108, 109,111, 112,116		102,104		
Doroneuria theodora (Needham & Claassen) 1922								102,103, 111,112	100,102, 104	102,104, 122		

SPECIES	REGION											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Eccoptura xanthenes (Newman) 1828		104	89	104								
Hesperoperla pacifica (Banks) 1900						103,104	116	1,4,15, 29,33,36, 37,54,55, 57,71,98, 102,103, 104,108, 109,111, 112,120	102,104	11,81, 102,104, 122		110
Neoperla clymene (Newman) 1839	96,104, 113	96,103, 104	89,96,104	94,96, 104	96,101, 104	81,96,104, 114,115	75,96,104					
Paragnetina fumosa (Banks) 1902						114						
P. immarginata (Say) 1823	103,104, 113	103,104	89,104,	104		87					41	
P. kansensis (Banks) 1905							104					
P. media (Walker) 1852	96,113	96,103, 104	73,89,103	73	28,61,68, 73,77,96, 101,104, 123		73				40,41,47, 48,73	
Perlesta frisoni Banks 1948			89									
P. placida (Hagen) 1861	96,104, 113	96,104	89,96, 103,104	94,96, 104	17,28,31, 32,77,96, 101,103, 104	87,96,104, 114,115	75,96,104					
Perlinella drymo (Newman) 1839	96,104	96,103, 104	89	96,104	30,96,101, 103,104	114,115						
Phasganophora capitata (Pictet) 1841	96,104, 113	96,103, 104	15,89,96, 103,104	19,24,96 104	28,77,96, 101,104		75,104				40,50	

	REGION											
SPECIES	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
CHLOROPERLIDAE												
Alloperla chandleri Jewett 1954									100			
A. concolor Ricker 1935											41	
A. delicata Frison 1935								112	80,100	102,112		110
A. fraterna Frison 1935									100,102	102,122		72,110
A. idei (Ricker) 1935											41	
A. imbecilla (Say) 1823	96	96		96	96						41,83	
A. leonarda Ricker 1952					96							
A. medveda Ricker 1952								102,112		102		
A. serrata Needham & Claassen 1925								112		23,102		72,104, 110
A. severa (Hagen) 1861								102,108, 109,111, 112		102		72,110
Hastaperla brevis (Banks) 1895	96,104, 113	96,103, 104	96,104	96,104	28,77,96, 101,104	96						
H. chilnualna Ricker 1952									80,100, 102	102,122		
H. orpha (Frison) 1937					96							
Kathroperla perdita Banks 1920								112	100,102, 104	11,102, 122		72,110
Neaviperla forcipata (Neave) 1929								112		102		72,110
Paraperla frontalis (Banks) 1902						102,104		54,55,84, 98,102, 103,104, 108,109, 111,112	100,102, 104	102,111		63,72,109

SPECIES	REGION											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
P. wilsoni Ricker 1965								112				
Suwallia autumna (Hoppe) 1938								112		102		110
S. lineosa (Banks) 1918								102,104, 109,112		102		
S. marginata (Banks) 1897	104	104			104						41,74	
S. pallidula (Banks) 1904						102,104		30,54,55, 98,102, 103,104, 108,109, 111,112	80,100, 102,104	23,102, 104		72,110
Sweltsa albertensis (Needham & Claassen) 1925								102,112		102		104
S. borealis (Banks) 1895								2,30,54, 55,98, 102,103, 104,109, 111,122	100,102, 104	23,102, 104,122		72,110
S. coloradensis (Banks) 1898								54,55,102, 103,104, 108,109, 111,112	100,102	102,122		110
S. continua (Banks) 1911									100			
S. exquisita (Frison) 1935								112		23,102		72,110
S. fidelis (Banks) 1920								102,104, 111,112	72,102, 104	102,111, 122		72,110
S. lamba (Needham & Claassen) 1925								72,102, 103,104, 109,111, 112		102		

	REGION											
SPECIES	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
S. lateralis (Banks) 1911	104	104		104								
S. mediana (Banks) 1911	104	103,104		19,104	28						83	
S. nanina (Banks) 1911		104		104								
S. occidens (Frison) 1937								102,112		102		72,110
S. onkos (Ricker) 1935											40,41,74	
S. oregonensis (Frison) 1935										23,102		72,110
S. pacifica (Banks) 1895								102,112	100,102, 103,104	102,104		72,110
S. pilosa (Needham & Claassen) 1925								98,104				
S. revelstoka (Jewett) 1955								112		102		72,110
S. tamalpa (Ricker) 1952									100			
S. townesi (Ricker) 1952									80,100			
Trisnaka diversa (Frison) 1935						85		102,108, 109,111, 112	100,102	102		72,110
T. pintada (Ricker) 1952						102		30,54,55, 102,109, 111,112	100,102	102		
T. signata (Banks) 1895						85		30,54,55, 98,104, 108,109, 111,112		104		
Utaperla sopladora Ricker 1952								30,102, 111,112		102		

SECTION 5

SELECTED REFERENCES FOR STONEFLY ECOLOGICAL PROFILES

1. Allan, J. D. 1975. The distributional ecology and diversity of benthic insects in Cement Creek, Colorado. Ecology 56:1040-1053.

2. Baumann, R. W. 1967. A study of the stoneflies (Plecoptera) of the Wasatch Front, Utah. M.S. Thesis, Dept. Zool., Ent., Univ. Utah 111 pp.

3. Hilsenhoff, W. L. and S. J. Billmyer. 1973. Perlodidae (Plecoptera) of Wisconsin. Great Lakes Ent. 6:1-14.

4. Branham, J. M., A. R. Gaufin and R. L. Traver. 1975. Growth of Plecoptera (stonefly) nymphs at constant, abnormally high temperatures. Great Basin Natur. 35:51-61.

5. Bell, H. L. and A. V. Nebeker. 1969. Preliminary studies on the tolerance of aquatic insects to low pH. J. Kans. Ent. Soc. 42:230-236.

6. Bell, H. L. 1971. Effect of low pH on the survival and emergence of aquatic insects. Water Res. 5:313-319.

7. Brungs, W. A. 1973. Effects of residual chlorine on aquatic life. J. Water Poll. Contr. Fed. 45:2180-2193.

8. Cather, M. R. and A. R. Gaufin. 1975. Comparative ecology of three *Zapada* species of Mill Creek, Wasatch Mountains, Utah (Plecoptera: Nemouridae). Amer. Midl. Natur. 95:464-471.

9. Cairns, J., Jr. and K. L. Dickson. 1972. An ecosystematic study of the South River, Virginia. Va. Polytechnic Inst. and St. Univ., Water Resources Res. Center Bull. 54.

10. Cather, M. R. and A. R. Gaufin. 1975. Life history and ecology of *Megarcys signata* (Plecoptera: Perlodidae), Mill Creek, Wasatch Mountains, Utah. Great Basin Natur. 35:39-48.

11. Chapman, D. W. and R. L. Demory. 1963. Seasonal changes in the food ingested by aquatic insect larvae and nymphs in two Oregon streams. Ecology 44:140-146.

12. Clifford, H. F. 1966. The ecology of invertebrates in an intermittent stream. Invest. Ind. Lakes, Str. 7:57-98.

13. Clifford, H. F. 1969. Limnological features of a northern brown-water stream, with special reference to the life histories of the aquatic insects. Amer. Midl. Natur. 82:578-597.

14. Coffman, W. P., K. W. Cummins and J. C. Wuycheck. 1971. Energy flow in a woodland stream ecosystem. I. Tissue support structure of the autumnal community. Arch. Hydrobiol. 68:232-276.

15. Cummins, K. W. 1973. Trophic relations of aquatic insects. Ann. Rev. Ent. 18:183-206.

16. Cummins, K. W., W. P. Coffman and P. A. Roff. 1966. Trophic relationships in a small woodland stream. Verh. Int. Ver. Limnol. 16:627-638.

17. Cummins, K. W. and G. H. Lauff. 1969. The influence of substrate particle size on the microdistribution of stream macrobenthos. Hydrobiol. 34:145-181.

18. Cummins, K. W., R. C. Petersen, F. O. Howard, J. C. Wuycheck and V. I. Holt. 1973. The utilization of leaf litter by stream detritavores. Ecology 54:336-345.

19. Cushman, R. M., J. W. Elwood and S. G. Hildebrand. 1975. Production dynamics of *Alloperla mediana* Banks (Plecoptera: Chloroperlidae) and *Diplectrona modesta* Banks (Trichoptera: Hydropsychidae) in Walker Branch, Tennessee. Oak Ridge Natl. Lab. Environ. Sci. Div. Publ. No. 785, 64 pp.

20. Elder, J. A. and A. R. Gaufin. 1973. Notes on the occurrence and distribution of *Pteronarcys californica* Newport (Plecoptera) within streams. Great Basin Natur. 33:218-220.

21. Eastern Illinois Univ. Div. Life Sci. 1971. Biological survey of streams of Coles County, Illinois. U.S.E.P.A. Water Poll. Contr. Res. Ser. 147 pp.

22. Elder, J. A. and A. R. Gaufin. 1974. The toxicity of three mercurials to *Pteronarcys californica* Newport, and some possible physiological effects which influence the toxicities. Environ. Res. 7:169-175.

23. Ellis, R. J. 1975. Seasonal abundance and distribution of adult stoneflies of Sashin Creek, Baranof Island, Southeastern Alaska. Pan-Pac. Ent. 51:23-30.

24. Elwood, J. W. and R. M. Cushman. 1975. The life history and ecology of *Peltoperla maria* (Plecoptera: Peltoperlidae) in a small spring-fed stream. Verh. Internat. Verein. Limnol. 19:3050-3056.

25. Finni, G. R. 1973. Biology of winter stoneflies in a central Indiana stream (Plecoptera). Ann. Ent. Soc. Amer. 66:1243-1248.

26. Fuller, R. L. and K. W. Stewart. 1977. The food habits of stoneflies (Plecoptera) in the Upper Gunnison River, Colorado. Environ. Ent.

6:293-302.

27. Gammon, J. R. 1970. The effect of inorganic sediment on stream biota. U.S.E.P.A. Water Poll. Contr. Res. Ser. 141 pp.

28. Gaufin, A. R. 1958. The effects of pollution on a midwestern stream. Ohio J. Sci. 58:197-208.

29. Gaufin, A. R. 1959. Production of bottom fauna in the Provo River, Utah. Iowa St. Coll. J. Sci. 33:395-419.

30. Gaufin, A. R. 1962. Environmental requirements of Plecoptera. In: Environmental Requirements of Aquatic Insects, Biological Problems in Water Pollution. p. 105-110.

31. Gaufin, A. R. 1973. Use of aquatic invertebrates in the assessment of water quality. Biol. Meth. for the Assess. Water Qual., ASTM STP528, Amer. Soc. Testing and Mater. pp. 96-116.

32. Gaufin, A. R. and C. M. Tarzwell. 1956. Aquatic macro-invertebrate communities as indicators of organic pollution in Lytle Creek. Sewage and Industr. Wastes 28:908-924.

33. Gaufin, A. R., L. D. Jensen, A. V. Nebeker, T. Nelson and R. W. Teel. 1965. The toxicity of ten organic insecticides to various aquatic invertebrates. Water and Sewage Works July 1965.

34. Gaufin, A. R. and S. Hern. 1971. Laboratory studies on tolerance of aquatic insects to heated waters. J. Kans. Ent. Soc. 44:240-245.

35. Gaufin, A. R., J. Stanford, R. Clubb and E. Nisonger. 1972. Dynamics and productivity of aquatic invertebrates in a desert environment. Progr. Rept. Desert Biome, U.S.I.B.P. 19 pp.

36. Gaufin, A. R., R. Clubb and R. Newell. 1974. Studies on the tolerance of aquatic insects to low oxygen concentrations. Great Basin Natur. 34:45-59.

37. Gaufin, R. F. and A. R. Gaufin. 1961. The effect of low oxygen concentrations on stoneflies. Proc. Ut. Acad. Sci. Arts, Letters. 38:57-64.

38. Hales, D. C. and A. R. Gaufin. 1971. Observations on the emergence of two species of stoneflies. Ent. News 82:107-109.

39. Harper, P. P. 1973. Life histories of Nemouridae and Leuctridae in Southern Ontario (Plecoptera). Hydrobiol. 41:309-356.

40. Harper, P. P. 1973. Emergence, reproduction and growth of setipalpian Plecoptera in Southern Ontario. Oikos 24:94-107.

41. Harper, P. P. and J-G. Pilon. 1970. Annual patterns of emergence of some Quebec stoneflies (Insecta: Plecoptera). Canad. J. Zool. 48:681-694

42. Harper, P. P. and H. B. N. Hynes. 1972. Life-histories of Capniidae and Taeniopterygidae (Plecoptera) in Southern Ontario. Arch. Hydrobiol. Suppl. 40:274-314.

43. Heiman, D. R. and A. W. Knight. 1975. The influence of temperature on the bioenergetics of the carnivorous stonefly nymph, *Acroneuria californica* Banks (Plecoptera: Perlidae). Ecology 56:105-116.

44. Holdsworth, R. P., Jr. 1941. The life history and growth of *Pteronarcys proteus* Newman (Pteronarcidae: Plecoptera). Ann. Ent. Soc. Amer. 34:495-502.

45. Hynes, H. B. N. 1974. Further studies on the distribution of stream animals within the substratum. Limnol. Oceanogr. 19:92-99.

46. Hynes, H. B. N. 1976. Biology of the Plecoptera. Ann. Rev. Ent. pp. 135-153.

47. Kapoor, N. N. 1972. Oxygen consumption of *Paragnetina media* (Walker): Light-dark effect on respiratory rates. Experientia 28:1311-1312.

48. Kapoor, N. N. 1974. Some studies on the respiration of stonefly nymph, *Paragnetina media* (Walker). Hydrobiol. 44:37-41.

49. Kapoor, N. N. and W. Griffiths. 1975. Oxygen consumption of nymphs of *Phasganophora capitata* (Pictet) (Plecoptera) with respect to body weight and oxygen concentrations. Canad. J. Zool. 53:1089-1092.

50. Kapoor, N. N. and W. Griffiths. 1976. The effect of copper on the oxygen consumption rates of the stonefly nymph, *Phasganophora capitata* (Pictet) (Plecoptera). Zool. J. Linn. Soc. 59:209-215.

51. Kellogg, R. L. and R. V. Bulkley. 1976. Seasonal concentrations of dieldrin in water, channel catfish, and catfish-food organisms, Des Moines River, Iowa-1971-73. Pesticides Monit. J. 9:186-194.

52. Knight, A. W. and A. R. Gaufin. 1964. Relative importance of varying oxygen concentration, temperature, and water flow on the mechanical activity and survival of the Plecoptera nymph, *Pteronarcys californica* Newport. Proc. Ut. Acad. Sci. Arts, Letters 41:14-28.

53. Knight, A. W. and A. R. Gaufin. 1965. Function of stonefly gills under reduced dissolved oxygen concentration. Proc. Ut. Acad. Sci. Arts, Letters 42:186-190.

54. Knight, A. W. and A. R. Gaufin. 1966. Altitudinal distribution of stoneflies (Plecoptera) in a Rocky Mountain drainage system. J. Kans. Ent. Soc. 39:668-675.

55. Knight, A. W. and A. R. Gaufin. 1967. Stream type selection and associations of stoneflies (Plecoptera) in a Colorado River drainage system. J. Kans. Ent. Soc. 40:347-352.

56. Leonard, J. W. 1941. Some observations on the winter feeding habits of brook trout fingerlings in relation to natural food organisms present. Trans. Amer. Fish. Soc. 71:219-227.

57. Lium, B. W. 1967. Toxicity of insecticides to two species of stonefly nymph. M.A. Thesis. Univ. Utah. Dept. Zool., Ent. 68 pp.

58. MacKay, R. J. and J. Kalff. 1969. Seasonal variation in standing crop and species diversity of insect communities in a small Quebec stream. Ecology 50:101-109.

59. Minshall, G. W. 1968. Community dynamics of the benthic fauna in a woodland springbrook. Hydrobiol. 32:305-339.

60. Minshall, G. W. and J. N. Minshall. 1966. Notes on the life history and ecology of *Isoperla clio* (Newman) and *Isogenus decisus* Walker (Plecoptera: Perlodidae). Amer. Midl. Natur. 76:340-350.

61. Narf, R. P. and W. L. Hilsenhoff. 1974. Emergence pattern of stoneflies (Plecoptera) in Otter Creek, Wisconsin. Great Lakes Ent. 7: 117-125.

62. Petersen, R. C. and K. W. Cummins. 1974. Leaf processing in a woodland stream. Freshwat. Biol. 4:343-368.

63. Neave, F. 1929. Reports of the Jasper Park Lakes Investigations 1925-26. II. Plecoptera. Contr. Canad. Biol. & Fish. 4:159-167.

64. Nebeker, A. V. 1971. Effect of temperature at different altitudes on the emergence of aquatic insects from a single stream. J. Kans. Ent. Soc. 44:26-35.

65. Nebeker, A. V. and A. R. Gaufin. 1966. New stoneflies from Idaho (Plecoptera). Ent. News 78:36-43.

66. Nebeker, A. V. and A. R. Gaufin. 1966. New *Paraleuctra* from the Rocky Mountains (Plecoptera: Leuctridae). Ent. News 77:255-259.

67. Nebeker, A. V. and A. R. Gaufin. 1967. Factors affecting wing length and emergence in the winter stonefly *Capnia nana*. Ent. News. 78:85-92.

68. Nebeker, A. V. and A. E. Lemke. 1968. Preliminary studies on the tolerance of aquatic insects to heated waters. J. Kans. Ent. Soc. 41: 413-418.

69. Newcomer, E. J. 1918. Some stoneflies injurious to vegetation. J. Agr. Res. 13:37-42.

70. Radford, D. S. and R. Hartland-Rowe. 1971. The life cycles of some stream insects (Ephemeroptera, Plecoptera) in Alberta. Canad. Ent. 103:609-617.

71. Richardson, J. W. and A. R. Gaufin. 1971. Food habits of some western stonefly nymphs. Trans. Amer. Ent. Soc. 97:91-121.

72. Ricker, W. E. 1939. A preliminary list of stoneflies (Plecoptera) from the vicinity of Cultus Lake, British Columbia. Proc. Ent. Soc. B.C. 35:4 pp.

73. Ricker, W. E. 1949. The North American species of *Paragnetina* (Plecoptera, Perlidae). Ann. Ent. Soc. Amer. 42:279-288.

74. Ricker, W. E., R. Malouin, P. Harper and H. H. Ross. 1968. Distribution of Quebec stoneflies (Plecoptera). Natur. Canad. 95:1085-1123.

75. Ryck, F., Jr. 1973. The mayfly and stonefly fauna of Missouri Ozark streams. Trans. Mo. Acad. Sci. 7-8:3-21.

76. Seeman, T. M. 1927. Dragonflies, mayflies and stoneflies of Southern California. J. Ent. and Zool. 19:1-69.

77. Shapas, T. J. and W. L. Hilsenhoff. 1976. Feeding habits of Wisconsin's predominant lotic Plecoptera, Ephemeroptera, and Trichoptera. Great Lakes Ent. 9:175-188.

78. Sheldon, A. L. 1969. Size relationships of *Acroneuria californica* (Perlidae, Plecoptera) and its prey. Hydrobiol. 34:85-94.

79. Sheldon, A. L. 1972. Comparative ecology of *Arcynopteryx* and *Diura* (Plecoptera) in a California stream. Arch. Hydrobiol. 69:521-546.

80. Sheldon, A. L. and S. G. Jewett, Jr. 1967. Stonefly emergence in a Sierra Nevada stream (Plecoptera). Pan-Pac. Ent. 43:1-8.

81. Siegfried, C. A. and A. W. Knight. 1976. Trophic relations of *Acroneuria (Calineuria) californica* (Plecoptera: Perlidae) in a Sierra foothill stream. Environ. Ent. 5:575-581.

82. Siegfried, C. A. and A. W. Knight. 1976. Prey selection by a setipalpian stonefly nymph, *Acroneuria (Calineuria) californica* Banks (Plecoptera: Perlidae). Ecology 57:603-608.

83. Sprules, W. M. 1947. An ecological investigation of stream insects in Algonquin Park, Ontario. Univ. Toronto St., Biol. Ser. 56:81 pp.

84. Stanford, J. A. and A. R. Gaufin. 1974. Hyporheic communities of two Montana rivers. Science 185:700-702.

85. Stark, B. P., T. A. Wolff and A. R. Gaufin. 1975. New records of stoneflies (Plecoptera) from New Mexico. Great Basin Natur. 35:97-99.

86. Stern, M. S. and D. H. Stern. 1969. A limnological study of a Tennessee cold springbrook. Amer. Midl. Natur. 82:62-82.

87. Stewart, K. W., B. P. Stark and T. G. Huggins. 1976. The stoneflies (Plecoptera) of Louisiana. Great Basin Natur. 36:366-384.

88. Surber, E. W. and W. E. Bessey. 1974. Minimum oxygen levels survived by stream invertebrates. Va. Polytech. Inst. and St. Univ., Water Resources Res. Center, Bull. 81, 52 pp.

89. Tarter, D. C. 1976. Plecoptera. In: Limnology in West Virginia. Marshall Univ. pp. 39-119.

90. Tebo, L. B., Jr. and H. W. Hassler. 1961. Seasonal abundance of aquatic insects in Western North Carolina trout streams. J. Elisha Mitchell Sci. Soc. 77:249-259.

91. Wallace, J. B., W. R. Woodall and F. F. Sherberger. 1970. Breakdown of leaves by feeding of *Peltoperla maria* nymphs (Plecoptera: Peltoperlidae). Ann. Ent. Soc. Amer. 63:562-567.

92. Ward, J. V. 1974. A temperature-stressed stream ecosystem below a hypolimnial release mountain reservoir. Arch. Hydrobiol. 74:247-275.

93. Warnick, S. L. and H. L. Bell. 1969. The acute toxicity of some heavy metals to different species of aquatic insects. J. Water Poll. Contr. Fed. 41:280-284.

94. White, D. S. 1974. The distribution of stoneflies (Insecta: Plecoptera) of the Salt River, Kentucky. Trans. Ky. Acad. Sci. 35:17-23.

95. Woodall, W. R., Jr. and J. B. Wallace. 1972. The benthic fauna in four small southern Appalachian streams. Amer. Midl. Natur. 88:393-407.

96. Harden, P. H. and C. E. Mickel. 1952. The stoneflies of Minnesota (Plecoptera). Univ. Minn. Agr. Exp. Sta. Tech. Bull. 201, 84 pp.

97. Ross, H. H. and W. E. Ricker. 1971. The classification, evolution and dispersal of the winter stonefly genus *Allocapnia*. Ill. Biol. Monogr. 45, 166 pp.

98. Dodds, G. S. and F. L. Hisaw. 1925. Ecological studies on aquatic insects. IV. Altitudinal range and zonation of mayflies, stoneflies and caddisflies in the Colorado Rockies. Ecology 6:380-390.

99. Frison, T. H. 1929. Fall and winter stoneflies, or Plecoptera, of Illinois. Bull. Ill. Natur. Hist. Surv. 18:344-409.

100. Jewett, S. G., Jr. 1960. The stoneflies (Plecoptera) of California. Bull. Calif. Insect. Surv. 6:125-177.

101. Frison, T. H. 1935. The stoneflies, or Plecoptera, of Illinois. Bull. Ill. Natur. Hist. Surv. 20:280-471.

102. Jewett, S. G., Jr. 1959. The stoneflies (Plecoptera) of the Pacific

Northwest. Ore. St. Coll. Press. 95 pp.

103. Claassen, P. W. 1931. Plecoptera nymphs of America (North of Mexico). Thom. Say Found. 199 pp.

104. Needham, J. G. and P. W. Claassen. 1925. A monograph of the Plecoptera or stoneflies of America North of Mexico. Thom. Say Found. 397 pp.

105. Harper, P. P. and H. B. N. Hynes. 1971. The nymphs of the Nemouridae of Eastern Canada (Insecta: Plecoptera). Canad. J. Zool. 49:1129-1142.

106. Harper, P. P. and H. B. N. Hynes. 1971. The Capniidae of Eastern Canada (Insecta: Plecoptera). Canad. J. Zool. 49:921-940.

107. Harper, P. P. and H. B. N. Hynes. 1971. The Leuctridae of Eastern Canada (Insecta: Plecoptera). Canad. J. Zool. 49:915-920.

108. Stanford, J. A. 1975. The ecology and life histories of Plecoptera in the upper Flathead River, Montana. Ph.D. Diss., Univ. Utah, Dept. Biol. p. 83-238.

109. Oblad, B. R. 1969. A study of the stoneflies (Plecoptera) of the Yampa River drainage system, Moffat and Routt Co., Colorado. M.A. Thesis, Univ. Mont. 144 pp.

110. Ricker, W. E. 1943. Stoneflies of Southwestern British Columbia. Ind. Univ. Publ. Sci. Ser. 145 pp.

111. Gaufin, A. R., A. V. Nebeker and J. Sessions. 1966. The stoneflies (Plecoptera) of Utah. Univ. Utah Biol. Ser. 14:1-89.

112. Gaufin, A. R., W. E. Ricker, M. Miner, P. Milam and R. A. Hays. 1972. The stoneflies (Plecoptera) of Montana. Trans. Amer. Ent. Soc. 98:1-161.

113. Hitchcock, S. W. 1974. The Plecoptera or stoneflies of Connecticut. Pt. 7. Guide to the Insects of Connecticut. State Geol. and Natur. Hist. Surv. Conn. Bull. 107, 262 pp.

114. Szczytko, S. W. and K. W. Stewart. 1977. The stoneflies (Plecoptera) of Texas. Trans. Amer. Ent. Soc. 103:327-378.

115. Stewart, K. W., R. W. Baumann and B. P. Stark. 1974. The distribution and past dispersal of southwestern United States Plecoptera. Trans. Amer. Ent. Soc. 99:507-546.

116. Gaufin, A. R., L. D. Jensen and T. Nelson. 1961. Bioassays determine pesticide toxicity to aquatic invertebrates. Water and Sewage Works. 108:355-359.

117. Gaufin, A. R. 1971. Water quality requirements of aquatic insects.

U.S. Dept. Interior Fed. Water Poll. Contr. Admin. Natl. Water Qual. Lab. 65 pp.

118. Gaufin, A. R. 1973. Water quality requirements of aquatic insects. Off. Res. and Dev., U.S.E.P.A. 89 pp.

119. Jensen, L. D. and A. R. Gaufin. 1964. Long-term effects of organic insecticides on two species of stonefly naiads. Trans. Amer. Fish. Soc. 93:357-363.

120. Yearsley, G. L. 1971. Tolerance limits of aquatic insects to sulfuric and hydrochloric acid. M.S. Thesis Dept. Zool. and Ent., Univ. Utah. 91 pp.

121. Jensen, L. D. and A. R. Gaufin. 1964. Effects of ten organic insecticides on two species of stonefly naiads. Trans. Amer. Fish. Soc. 93:27-34.

122. Kerst, C. D. and N. H. Anderson. 1975. The Plecoptera community of a small stream in Oregon, U.S.A. Freshwat. Biol. 5:189-203.

123. Heiman, D. R. and A. W. Knight. 1972. Upper-lethal-temperature relations of the nymphs of the stonefly, *Paragnetina media*. Hydrobiol. 39:479-493.

124. Nebeker, A. V. 1971. Effect of water temperature on nymphal feeding rate, emergence, and adult longevity of the stonefly *Pteronarcys dorsata*. J. Kans. Ent. Soc. 44:21-26.

125. Vaught, G. L. and K. W. Stewart. 1974. The life history and ecology of the stonefly *Neoperla clymene* (Newman) (Plecoptera:Perlidae). Ann. Ent. Soc. Amer. 67:167-178.

SECTION 6

ECOLOGICAL PROFILES
FOR
NORTH AMERICAN PLECOPTERA

Acroneuria abnormis (Newman)

Parameters		41	83	86	89	90	96	101	103	104	113	Notes
pH	Acidobiontic											
	Acidophilous		X									
	Neutral			X		X						
	Alkaliphilous											
	Alkalibiontic											
	Indifferent											
Nutri-ent	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Organ-ics	Saprophilic											
	Facultative											
	Saproxenous				X							
	Saprophobic											
O_2	Euoxyphilous		X	X	X							
	Mesoxyphilous		X									
	Oligoxyphilous											
Tempera-ture	Euthermal											
	Mesothermal	X	X			X						
	Oligothermal	X		X								
	Stenothermal											
	Metathermal			X								
	Eurythermal	X										
Turbid-ity	Eulichtophilous											
	Mesolichtophilous											
	Polylichtophilous											
	Oligolichtophilous											
Current	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous											
	Rheobiontic		X	X					X			
General Habitat	Lake											(83) 1281-1400' el
	Pond											
	River	X						X				
	Stream			X		X	X		X			
	Other											
Specific Habitat	Epibenthic											
	Embenthic											
	Epipelic											
	Episabulic											
	Epilithic			X					X			
	Epixylous											
	Epiphytic											
Emer-gence	Winter											
	Spring	X					X	X	X	X		
	Summer		X				X	X	X	X		
	Autumn											
Feeding	Predator							X	X		X	
	Herbivore			X								
	Omnivore											
	Scavenger			X								

Other Water Chemistry, Toxicity, Misc.

(86) 123-164 μmhos conductivity
26.7-33.7 ppm $CaCo_3$ alkalinity
2.7-4.5 ppm free CO_2
68-86 ppm t. hardness
0.8-1.8 ppm nitrate

(90) 8.0 ppm m.o. alkalinity
0 ppm p. alkalinity
3.5 ppm CO_2

(102,103,104) *A. depressa* is a synonym

Acroneuria arenosa (Pictet)

Parameters		References				Notes
		87	103	104	114	
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
Turbidity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic		X		X	
General Habitat	Lake					
	Pond					
	River	X				
	Stream	X	X		X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic		X			
	Epixylous					
	Epiphytic					
Emergence	Winter					
	Spring		X	X	X	
	Summer		X	X	X	
	Autumn					
Feeding	Predator		X			
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.	(104) *A. trijuncta* and *A. pennsylvanica* are synonyms.					

Acroneuria arida (Hagen)

Parameters		75	94	95	101	104	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral			X			
	Alkaliphilous	X					
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous	X					
	Saprophobic						
O_2	Euoxyphilous	X		X			
	Mesoxyphilous			X			
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal	X		X			
	Oligothermal			X			
	Stenothermal						
	Metathermal						
	Eurythermal	X		X			
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic		X				
General Habitat	Lake						(95) 700-1014m el
	Pond						
	River		X				
	Stream	X					
	Other						
Specific Habitat	Epibenthic						
	Embenthic		X				
	Epipelic						
	Episabulic						
	Epilithic		X				
	Epixylous						
	Epiphytic		X				
Emer-gence	Winter						
	Spring		X			X	
	Summer				X	X	
	Autumn						
Feeding	Predator	X			X		
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.	(95) 8.7-17.6 µmhos conductivity 10 ppm alkalinity						

Acroneuria carolinensis (Banks)

Parameters		89	104	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous	X		
	Saprophobic			
O_2	Euoxyphilous	X		
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream			
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter			
	Spring		X	
	Summer		X	
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Acroneuria evoluta Klapalek

Parameters		References			Notes
		28	89	104	
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous	X			
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous		X		
	Saprophobic	X			
O_2	Euoxyphilous	X	X		
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal	X			
	Oligothermal				
	Stenothermal				
	Metathermal	X			
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream	X			
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring				
	Summer			X	
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Acroneuria internata (Walker)

Parameters		References 89	96	101	104	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous	X				
	Saprophobic					
O_2	Euoxyphilous	X				
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous	X				
	Rheobiontic	X				
General Habitat	Lake					
	Pond					
	River	X				
	Stream	X				
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic	X				
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring	X				
	Summer	X	X	X		
	Autumn					
Feeding	Predator		X			
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Acroneuria lycorias (Newman)

Parameters		5	6	7	14	16	41	61	68	77	83	88	89	93	103	104	113	Notes
pH	Acidobiontic																	
	Acidophilous										X						X	(5) $TL_m^{96} = 3.32$
	Neutral	X	X					X										100% survival-pH 7
	Alkaliphilous								X			X						0% " -pH 2
	Alkalibiontic																	
	Indifferent																	(6) $TL_{50}^{30} = 3.85$
Nutri-ent	Eutrophic																	
	Mesotrophic																	
	Oligotrophic																	
	Dystrophic																	
Organ-ics	Saprophilic																	
	Facultative																	
	Saproxenous												X					
	Saprophobic				X													
O_2	Euoxyphilous	X	X						X		X		X					
	Mesoxyphilous											X		X				(88) min. O_2 survived for 12 hrs = 1.4 ppm
	Oligoxyphilous																	
Tempera-ture	Euthermal																	
	Mesothermal		X				X		X		X	X		X				(68) TL_m^{96} = 30°C
	Oligothermal	X					X	X										
	Stenothermal																	
	Metathermal	X																
	Eurythermal		X				X	X									X	
Turbid-ity	Eulichtophilous																	
	Mesolichtophilous																	
	Polylichtophilous																	
	Oligolichtophilous																	
Current	Limnobiontic																	
	Limnophilous																	
	Indifferent																	
	Rheophilous																	
	Rheobiontic				X	X					X				X			
General Habitat	Lake																	(83) 1281-1400' el
	Pond																	
	River						X											
	Stream	X	X		X	X		X				X						
	Other																	
Specific Habitat	Epibenthic																	
	Embenthic																	
	Epipelic																	
	Episabulic																	
	Epilithic														X			
	Epixylous																	
	Epiphytic																	
Emer-gence	Winter																	
	Spring						X	X							X	X		
	Summer						X	X			X				X	X		
	Autumn																	
Feeding	Predator				X					X					X			
	Herbivore																	
	Omnivore																	
	Scavenger																	

Other Water Chemistry, Toxicity, Misc.

(7) $TL_{50}^{7\ day}$ = .083-.261 mg/l residual chlorine

(61) 14-18 ppm $CaCO_3$ alkalinity

(68) 40 ppm t. alkalinity
35-40 ppm $CaCO_3$ hardness

(93) TL_m^{96}, 50% survival, pH, alkalinity, acid, hardness, N, metal, amount of metal absorbed for C^{++}, Zn^{++}, Ca^{++}, Pb^{++}, Fe^{++}, Ni^{++}, Co^{++}, Cr^{+++}, Hg^{++}.

Acroneuria mela Frison

Parameters		114	115	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri- ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ- ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera- ture	Euthermal			
	Mesothermal		X	
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid- ity	Eulichtophilous			
	Mesolichtophilous		X	
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream		X	
	Other		X	(115) intermittent str
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer- gence	Winter			
	Spring	X		
	Summer	X		
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Acroneuria perplexa Frison

Parameters		References	Notes
		89	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous	X	
	Saprophobic		
O_2	Euoxyphilous	X	
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia aurora Ricker

Parameters		97	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal	X	
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic	X	
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia brooksi Ross

Parameters		References																									Notes
		97																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutri- ent	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organ- ics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Tempera- ture	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbid- ity	Eulichtophilous	X																									
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic	X																									
General Habitat	Lake																										
	Pond																										
	River																										
	Stream	X																									
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emer- gence	Winter	X																									
	Spring																										
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Allocapnia cunninghami Ross & Ricker

Parameters		References	Notes
		97	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia curiosa Frison

Parameters		References																									Notes
		97																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal	X																									
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic	X																									
General Habitat	Lake																										
	Pond																										
	River																										
	Stream	X																									
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter	X																									
	Spring	X																									
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Allocapnia forbesi Frison

Parameters		References																										Notes
		30	94	97	99	101																						
pH	Acidobiontic																											
	Acidophilous																											
	Neutral																											
	Alkaliphilous																											
	Alkalibiontic																											
	Indifferent																											
Nutrient	Eutrophic																											
	Mesotrophic																											
	Oligotrophic																											
	Dystrophic																											
Organics	Saprophilic																											
	Facultative																											
	Saproxenous																											
	Saprophobic																											
O_2	Euoxyphilous																											
	Mesoxyphilous																											
	Oligoxyphilous																											
Temperature	Euthermal																											
	Mesothermal																											
	Oligothermal			X																								
	Stenothermal																											
	Metathermal																											
	Eurythermal																											
Turbidity	Eulichtophilous			X																								
	Mesolichtophilous																											
	Polylichtophilous																											
	Oligolichtophilous																											
Current	Limnobiontic																											
	Limnophilous																											
	Indifferent																											
	Rheophilous																											
	Rheobiontic																											
General Habitat	Lake																											
	Pond																											
	River		X																									
	Stream			X	X	X																						(30,97) intermittent str
	Other	X		X																								
Specific Habitat	Epibenthic																											
	Embenthic																											
	Epipelic																											
	Episabulic																											
	Epilithic																											
	Epixylous																											
	Epiphytic																											
Emergence	Winter		X	X	X	X																						
	Spring			X		X																						
	Summer																											
	Autumn																											
Feeding	Predator																											
	Herbivore																											
	Omnivore																											
	Scavenger																											
Other Water Chemistry, Toxicity, Misc.																												

Allocapnia frisoni Ross & Ricker

Parameters		97	114	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous	X		
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous		X	
	Rheobiontic	X		
General Habitat	Lake			
	Pond			(114) low elevations
	River		X	
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter	X		
	Spring			
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Allocapnia fumosa Ross

Parameters		References	Notes
		97	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic	X	
General Habitat	Lake		(97) high elevations
	Pond		
	River	X	
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia granulata (Claassen)

Parameters		References																									Notes
		25	28	42	68	87	97	98	99	101	103	104	106	113	114	115											
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous	X	X		X																						
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic			X																							
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic		X																								
O_2	Euoxyphilous	X	X																								
	Mesoxyphilous				X																						
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal		X																								(68) TL_m^{96} = 23.0°C
	Oligothermal	X																									
	Stenothermal																										
	Metathermal	X	X																								
	Eurythermal																										
Turbidity	Eulichtophilous															X											
	Mesolichtophilous						X						X														
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous						X							X													
	Rheobiontic							X																			
General Habitat	Lake																										
	Pond																										(114) intermittent str
	River			X					X	X					X												
	Stream	X	X	X			X	X	X	X					X	X											
	Other														X												
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic							X																			
	Epixylous																										
	Epiphytic								X																		(99) leaf packs
Emergence	Winter	X		X		X	X	X	X	X	X	X			X												
	Spring			X			X	X		X	X	X															
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore								X		X			X													(99,113) diatoms
	Omnivore																										
	Scavenger										X			X													

Other Water Chemistry, Toxicity, Misc.

(68) 40 ppm t. alkalinity
35-40 ppm $CaCO_3$ t. hardness

Allocapnia illinoensis Frison

Parameters		61	97	101	106	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral	X				
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal	X	X			
	Stenothermal					
	Metathermal					
	Eurythermal	X				
Turbidity	Eulichtophilous		X			
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					
	Pond					
	River					
	Stream	X	X	X		
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emergence	Winter	X	X	X		
	Spring					
	Summer					
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.	(61) 14-18 ppm $CaCO_3$ alkalinity					

Allocapnia indianae Ricker

Parameters		References 97	113	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal		X	
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous	X		
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic	X		
General Habitat	Lake			
	Pond			
	River			
	Stream	X	X	
	Other			(113) spring str
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring			
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Allocapnia jeanae Ross

Parameters		97	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal	X	
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic	X	
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter	X	
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia loshada Ricker

Parameters		97	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic	X	
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia malverna Ross

Parameters		References		Notes
		97	114	
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri- ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ- ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera- ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid- ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream			
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer- gence	Winter	X	X	
	Spring		X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Allocapnia maria Hanson

Parameters		References	Notes
		97	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal	X	
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous	X	
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia minima (Newport)

Parameters		References				Notes
		97	98	104	106	
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
Turbid-ity	Eulichtophilous	X				
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic	X				
General Habitat	Lake					
	Pond					
	River	X	X		X	
	Stream		X		X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter	X				
	Spring	X	X	X		
	Summer					
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.	(104) *C. incisura* is a synonym.					

Allocapnia mohri Ross & Ricker

Parameters		References: 97	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous	X	
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic	X	
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia mystica Frison

Parameters		97	99	101	103	113	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal						
	Oligothermal	X					
	Stenothermal						
	Metathermal						
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic	X					
General Habitat	Lake						
	Pond						
	River						
	Stream	X	X	X			
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emer-gence	Winter	X	X	X	X		
	Spring	X		X	X		
	Summer						
	Autumn		X				
Feeding	Predator						
	Herbivore				X	X	
	Omnivore						
	Scavenger				X	X	(113) diatoms
Other Water Chemistry, Toxicity, Misc.							

Allocapnia nivicola (Fitch)

Parameters		28	42	61	97	106	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral			X			
	Alkaliphilous	X					
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic	X					
O_2	Euoxyphilous	X					
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal	X					
	Oligothermal			X			
	Stenothermal						
	Metathermal	X					
	Eurythermal			X			
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						
	Pond						
	River						
	Stream	X		X	X	X	
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic		X				(42) leaf packs
Emer-gence	Winter			X	X		
	Spring			X	X		
	Summer						
	Autumn						
Feeding	Predator						
	Herbivore						
	Omnivore						
	Scavenger						

Other Water Chemistry, Toxicity, Misc.: (61) 14-18 ppm $CaCO_3$ alkalinity

Allocapnia ohioensis Ross & Ricker

Parameters		References 97	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia ozarkana Ross

Parameters		References																									Notes
		97																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River																										
	Stream																										
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter	X																									
	Spring	X																									
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Allocapnia pechumani Ross & Ricker

Parameters		97	106	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous	X		
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter	X		
	Spring	X		
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Allocapnia peltoides Ross & Ricker

Parameters		References																									Notes
		97																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbidity	Eulichtophilous	X																									
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic	X																									
General Habitat	Lake																										
	Pond																										
	River																										
	Stream	X																									
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter	X																									
	Spring																										
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Allocapnia perplexa Ross & Ricker

Parameters		References: 97	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous	X	
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia polemistis Ross & Ricker

Parameters		References	Notes
		97	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous	X	
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia pygmaea (Burmeister)

Parameters		12	42	45	61	83	97	98	99	101	103	104	106	Notes
pH	Acidobiontic													
	Acidophilous					X								
	Neutral				X									
	Alkaliphilous		X											
	Alkalibiontic													
	Indifferent													
Nutrient	Eutrophic													
	Mesotrophic													
	Oligotrophic													
	Dystrophic													
Organics	Saprophilic													
	Facultative													
	Saproxenous													
	Saprophobic													
O_2	Euoxyphilous					X								
	Mesoxyphilous													
	Oligoxyphilous													
Temperature	Euthermal													
	Mesothermal		X			X								
	Oligothermal		X		X		X							
	Stenothermal													
	Metathermal													
	Eurythermal		X		X									
Turbidity	Eulichtophilous													
	Mesolichtophilous													
	Polylichtophilous													
	Oligolichtophilous													
Current	Limnobiontic													
	Limnophilous													
	Indifferent													
	Rheophilous													
	Rheobiontic					X	X	X						
General Habitat	Lake													(83) 1281-1400' el
	Pond													
	River													
	Stream		X		X	X	X	X	X	X			X	
	Other	X												(12) intermittent str
Specific Habitat	Epibenthic													
	Embenthic	X		X										
	Epipelic													
	Episabulic													
	Epilithic								X					
	Epixylous													
	Epiphytic													
Emergence	Winter	X	X		X		X	X	X	X	X			
	Spring	X	X				X	X		X	X			
	Summer													
	Autumn													
Feeding	Predator													
	Herbivore										X			
	Omnivore													
	Scavenger										X			

Other Water Chemistry, Toxicity, Misc.

(42) 162-190 ppm $CaCO_3$ alkalinity

226-246 ppm $CaCO_3$ hardness

395-428 µmhos conductivity

(61) 14-18 ppm $CaCO_3$ t. alkalinity

Allocapnia recta (Claassen)

Parameters		25	28	42	97	99	101	103	104	106	113	Notes
pH	Acidobiontic											
	Acidophilous											
	Neutral											
	Alkaliphilous	X	X									
	Alkalibiontic											
	Indifferent											
Nutri-ent	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Organ-ics	Saprophilic											
	Facultative											
	Saproxenous											
	Saprophobic		X									
O_2	Euoxyphilous	X	X									
	Mesoxyphilous											
	Oligoxyphilous											
Tempera-ture	Euthermal											
	Mesothermal		X									
	Oligothermal	X			X							
	Stenothermal											
	Metathermal	X	X									
	Eurythermal											
Turbid-ity	Eulichtophilous				X	X						
	Mesolichtophilous											
	Polylichtophilous											
	Oligolichtophilous											
Current	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous											
	Rheobiontic				X							
General Habitat	Lake											
	Pond											
	River											
	Stream	X	X	X	X		X			X	X	
	Other										X	(113) temporary str
Specific Habitat	Epibenthic											
	Embenthic											
	Epipelic											
	Episabulic											
	Epilithic											
	Epixylous											
	Epiphytic					X						(99) leaf detritus
Emer-gence	Winter	X		X	X	X	X	X	X			
	Spring				X		X		X			
	Summer											
	Autumn					X						
Feeding	Predator											
	Herbivore							X				
	Omnivore											
	Scavenger							X				
Other Water Chemistry, Toxicity, Misc.												

Allocapnia rickeri Frison

Parameters		References						Notes
		25	42	59	61	97	106	
pH	Acidobiontic							
	Acidophilous							
	Neutral				X			
	Alkaliphilous	X	X	X				
	Alkalibiontic							
	Indifferent							
Nutrient	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous	X		X				(59) 8-15 mg/l, >85% saturation
	Mesoxyphilous							
	Oligoxyphilous							
Temperature	Euthermal							
	Mesothermal							
	Oligothermal	X	X	X	X	X		
	Stenothermal							
	Metathermal	X	X					
	Eurythermal			X	X			
Turbidity	Eulichtophilous					X		
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic			X				
General Habitat	Lake							
	Pond							
	River							
	Stream	X	X	X	X	X	X	(59) 125-135m el
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic							
	Epixylous							
	Epiphytic							
Emergence	Winter	X				X		
	Spring					X		
	Summer							
	Autumn							
Feeding	Predator							
	Herbivore							
	Omnivore							
	Scavenger							

Other Water Chemistry, Toxicity, Misc.

(42) 206-208 ppm $CaCO_3$ alkalinity
238-252 ppm $CaCO_3$ hardness
448-458 µmhos conductivity

(59) 4-12 mg/l free CO_2
110-200 mg/l t. alkalinity

(61) 14-18 ppm $CaCO_3$

Allocapnia sandersoni Ricker

Parameters		References	Notes
		97	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal	X	
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic	X	
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia stannardi Ross

Parameters		References 97	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic	X	
General Habitat	Lake		(97) high elevations (97) rocky cascades
	Pond		
	River		
	Stream	X	
	Other	X	
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia tennessa Ross & Ricker

Parameters		References: 97	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous	X	
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia unzickeri Ross & Yamamoto

Parameters		References 97	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic	X	
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia virginiana Frison

Parameters		References: 97	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous	X	
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic	X	
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia vivipara (Claassen)

Parameters		25	28	30	31	32	42	61	94	97	98	99	101	103	104	106	113	Notes
pH	Acidobiontic																	
	Acidophilous																	
	Neutral							X										
	Alkaliphilous	X	X															
	Alkalibiontic																	
	Indifferent																	
Nutrient	Eutrophic																	
	Mesotrophic																	
	Oligotrophic																	
	Dystrophic																	
Organics	Saprophilic																	
	Facultative																	
	Saproxenous																X	
	Saprophobic		X			X												
O_2	Euoxyphilous	X	X		X	X												
	Mesoxyphilous																	
	Oligoxyphilous																	
Temperature	Euthermal																	
	Mesothermal		X		X													
	Oligothermal	X					X	X										
	Stenothermal																	
	Metathermal	X	X		X													
	Eurythermal						X	X										
Turbidity	Eulichtophilous																	
	Mesolichtophilous																	
	Polylichtophilous																	
	Oligolichtophilous																	
Current	Limnobiontic																	
	Limnophilous																	
	Indifferent																	
	Rheophilous								X									
	Rheobiontic																	
General Habitat	Lake																	(30,42,94,106) temporary; intermittent str
	Pond																	
	River												X					
	Stream	X	X		X	X	X	X			X	X	X			X		
	Other			X			X		X							X		
Specific Habitat	Epibenthic																	
	Embenthic																	
	Epipelic																	
	Episabulic																	
	Epilithic											X						
	Epixylous																	
	Epiphytic											X						(99) leaf packs
Emergence	Winter	X						X	X		X	X	X	X	X			
	Spring							X	X		X		X	X	X			
	Summer																	
	Autumn																	
Feeding	Predator																	(99,113) diatoms
	Herbivore											X		X			X	
	Omnivore																	
	Scavenger													X			X	

Other Water Chemistry, Toxicity, Misc.

(42) 202 ppm $CaCO_3$ alkalinity
276 ppm $CaCO_3$ hardness
453-462 μmhos conductivity

(61) 14-18 ppm $CaCO_3$ t. alkalinity

Allocapnia warreni Ross & Yamamoto

Parameters		References: 97	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter	X	
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia wrayi Ross

Parameters		References																									Notes
		97																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutri-ent	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organ-ics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Tempera-ture	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbid-ity	Eulichtophilous	X																									
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River																										
	Stream	X																									
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emer-gence	Winter	X																									
	Spring																										
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Allocapnia zekia Ross

Parameters		References 97	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal	X	
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		(97) spring-fed str
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Allocapnia zola Ricker

Parameters		References 97	113	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous	X	X	
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic	X		
General Habitat	Lake			
	Pond			
	River	X		
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter	X		
	Spring	X		
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Allonarcys biloba (Newman)

Parameters		References			Notes
		89	103	104	
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbidity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				(89) >1000' el
	Pond				
	River				
	Stream	X			
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emergence	Winter				
	Spring	X	X		
	Summer		X		
	Autumn				
Feeding	Predator				
	Herbivore	X			
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Allonarcys comstoki (Smith)

Parameters		References 89	104	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			(89) >1000' el
	Pond			
	River			
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring			
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Allonarcys proteus (Newman)

Parameters		44	58	89	103	104	113	Notes
pH	Acidobiontic							
	Acidophilous							
	Neutral		X					
	Alkaliphilous							
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic		X					
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous		X					(58) 5.7-12.2 mg/l O2 48.5%-95.5% saturation
	Mesoxyphilous							
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal							
	Oligothermal		X					
	Stenothermal							
	Metathermal		X					
	Eurythermal							
Turbid-ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic		X	X				
General Habitat	Lake							
	Pond							
	River							
	Stream	X	X	X	X	X		
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic		X					
	Epixylous							
	Epiphytic						X	
Emer-gence	Winter							
	Spring	X			X			
	Summer	X						
	Autumn							
Feeding	Predator							
	Herbivore				X			
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.								

Allonarcys scotti (Ricker)

Parameters		15	18	43	90	113	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral				X		
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutrient	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Temperature	Euthermal						
	Mesothermal				X		
	Oligothermal		X				
	Stenothermal						
	Metathermal		X				
	Eurythermal						
Turbidity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						
	Pond						
	River						
	Stream		X				
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emergence	Winter						
	Spring						
	Summer						
	Autumn						
Feeding	Predator						
	Herbivore		X				
	Omnivore						
	Scavenger	X	X	X		X	

Other Water Chemistry, Toxicity, Misc.

(90) 8 ppm m.o. alkalinity
0 ppm p. alkalinity
3.5 ppm CO_2

Alloperla chandleri Jewett

Parameters		References	Notes
		100	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		(100) 6000' el
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Alloperla concolor Ricker

Parameters		References																									Notes
		41																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal	X																									
	Stenothermal																										
	Metathermal	X																									
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River																										
	Stream	X																									
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter																										
	Spring	X																									
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Alloperla delicata Frison

Parameters		80	100	102	110	112	122	Notes
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous	X						
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous							
	Mesoxyphilous							
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal							
	Oligothermal						X	
	Stenothermal							
	Metathermal						X	
	Eurythermal							
Turbid-ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic							
General Habitat	Lake							(80) 1900m el (122) 213,198,152,68m el
	Pond							
	River			X		X		
	Stream	X		X	X	X	X	
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic							
	Epixylous							
	Epiphytic							
Emer-gence	Winter							
	Spring		X	X	X	X		
	Summer	X	X	X		X		
	Autumn							
Feeding	Predator							
	Herbivore							
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity							

Alloperla fraterna Frison

Parameters		72	100	102	110	122	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal						
	Oligothermal				X	X	
	Stenothermal						
	Metathermal					X	
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						(72) low elevations (122) 213,198,152,68m el
	Pond						
	River						
	Stream	X		X	X	X	
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emer-gence	Winter						
	Spring		X	X	X		
	Summer		X	X	X		
	Autumn						
Feeding	Predator						
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Alloperla idei (Ricker)

Parameters		References: 41	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal	X	
	Oligothermal	X	
	Stenothermal		
	Metathermal	X	
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River	X	
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring		
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Alloperla imbecilla (Say)

Parameters		References			Notes
		41	83	96	
pH	Acidobiontic				
	Acidophilous		X		
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous		X		
	Mesoxyphilous		X		
	Oligoxyphilous				
Temperature	Euthermal				
	Mesothermal	X	X		
	Oligothermal	X			
	Stenothermal				
	Metathermal	X			
	Eurythermal				
Turbidity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic		X		
General Habitat	Lake				(83) 1281-1400' el
	Pond				
	River	X		X	
	Stream		X	X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emergence	Winter				
	Spring	X	X		
	Summer	X	X	X	
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Alloperla leonarda Ricker

Parameters		References	Notes
		96	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.	(96) *A. sylvia* is a synonym.		

Alloperla medveda Ricker

Parameters		102	112	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River		X	
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring	X	X	
	Summer	X	X	
	Autumn		X	
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Alloperla serrata Needham & Claassen

Parameters		23	72	102	104	110	112	Notes
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous							
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous							
	Mesoxyphilous							
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal							
	Oligothermal		X					
	Stenothermal							
	Metathermal							
	Eurythermal							
Turbid-ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic							
General Habitat	Lake							(72) low elevations
	Pond							
	River		X					
	Stream	X		X		X	X	
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic							
	Epixylous							
	Epiphytic							
Emer-gence	Winter							
	Spring			X		X	X	
	Summer	X		X	X		X	
	Autumn							
Feeding	Predator							
	Herbivore							
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.								

Alloperla severa (Hagen)

Parameters		72	102	108	109	110	111	112	Notes
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous				X				
	Alkalibiontic								
	Indifferent								
Nutrient	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous				X				
	Mesoxyphilous								
	Oligoxyphilous								
Temperature	Euthermal								
	Mesothermal	X							
	Oligothermal	X							
	Stenothermal								
	Metathermal								
	Eurythermal	X							
Turbidity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
General Habitat	Lake								(109) 6750-8000' el
	Pond								
	River	X			X				
	Stream		X		X	X	X	X	(72,110,112) low el
	Other								
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic								
Emergence	Winter								
	Spring		X	X		X	X	X	
	Summer			X	X	X	X	X	
	Autumn					X		X	
Feeding	Predator								
	Herbivore								
	Omnivore								
	Scavenger								
Other Water Chemistry, Toxicity, Misc.	(112) *A. elevata* is a synonym.								

Amphinemura banksi Baumann & Gaufin

Parameters		References																									Notes
		112																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake	X																									
	Pond																										
	River																										
	Stream	X																									
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter																										
	Spring																										
	Summer	X																									
	Autumn	X																									
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Amphinemura delosa (Ricker)

Parameters		39	59	61	75	77	83	96	101	103	104	105	113	Notes
pH	Acidobiontic													
	Acidophilous						X							
	Neutral			X										
	Alkaliphilous	X	X		X									
	Alkalibiontic													
	Indifferent													
Nutri-ent	Eutrophic													
	Mesotrophic													
	Oligotrophic													
	Dystrophic													
Organ-ics	Saprophilic													
	Facultative													
	Saproxenous				X									
	Saprophobic													
O_2	Euoxyphilous		X		X		X							(59) 8-15 mg/l O_2
	Mesoxyphilous						X							>85% saturation
	Oligoxyphilous													
Tempera-ture	Euthermal													
	Mesothermal				X		X						X	
	Oligothermal	X	X	X										
	Stenothermal													
	Metathermal	X	X				X							
	Eurythermal			X	X									
Turbid-ity	Eulichtophilous													
	Mesolichtophilous													
	Polylichtophilous													
	Oligolichtophilous													
Current	Limnobiontic													
	Limnophilous													
	Indifferent													
	Rheophilous													
	Rheobiontic		X				X							
General Habitat	Lake													(59) 130-145m el
	Pond													(83) 1281-1400' el
	River													
	Stream	X	X	X	X				X	X		X	X	(39) intermittent str
	Other	X												
Specific Habitat	Epibenthic													
	Embenthic													
	Epipelic													
	Episabulic													
	Epilithic													
	Epixylous													
	Epiphytic								X	X				(101,103) leaf packs
Emer-gence	Winter													
	Spring	X		X			X		X	X	X			
	Summer	X		X			X	X	X	X	X			
	Autumn							X			X			
Feeding	Predator													
	Herbivore				X				X	X			X	
	Omnivore													
	Scavenger					X				X			X	

Other Water Chemistry, Toxicity, Misc.

(75,83,96,101,103,104) *N. venosa* is a synonym.

(39) 162-234 ppm $CaCO_3$ alkalinity
222-320 ppm $CaCO_3$ hardness
395-600 μmhos conductivity

(59) 100-230 mg/l alkalinity
4-13 mg/l free CO_2

Amphinemura linda (Ricker)

Parameters		References: 39	105	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous	X		
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal	X		
	Stenothermal			
	Metathermal	X		
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream		X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter			
	Spring			
	Summer	X		
	Autumn	X		
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.	(39) 162-234 ppm $CaCO_3$ alkalinity 222-320 ppm $CaCO_3$ hardness 395-600 µmhos conductivity			

Amphinemura nigritta (Provancher)

Parameters		References 30	39	94	105	113	114	Notes
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous	X						
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous							
	Mesoxyphilous							
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal							
	Oligothermal		X					
	Stenothermal							
	Metathermal		X					
	Eurythermal							
Turbid-ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous			X				
	Rheobiontic							
General Habitat	Lake							(30,39) intermittent str
	Pond							
	River			X				
	Stream				X			
	Other	X	X					
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic			X				
	Epixylous							
	Epiphytic			X				
Emer-gence	Winter							
	Spring	X		X		X	X	
	Summer					X	X	
	Autumn							
Feeding	Predator							
	Herbivore							
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.	(39) 162-234 ppm $CaCO_3$ alkalinity 222-320 ppm $CaCO_3$ hardness 395-600 µmhos conductivity							

Amphinemura varshava (Ricker)

Parameters		References																								Notes
		113																								
pH	Acidobiontic																									
	Acidophilous																									
	Neutral																									
	Alkaliphilous																									
	Alkalibiontic																									
	Indifferent																									
Nutrient	Eutrophic																									
	Mesotrophic																									
	Oligotrophic																									
	Dystrophic																									
Organics	Saprophilic																									
	Facultative																									
	Saproxenous																									
	Saprophobic																									
O_2	Euoxyphilous																									
	Mesoxyphilous																									
	Oligoxyphilous																									
Temperature	Euthermal																									
	Mesothermal																									
	Oligothermal	X																								
	Stenothermal																									
	Metathermal																									
	Eurythermal																									
Turbidity	Eulichtophilous																									
	Mesolichtophilous																									
	Polylichtophilous																									
	Oligolichtophilous																									
Current	Limnobiontic																									
	Limnophilous																									
	Indifferent																									
	Rheophilous																									
	Rheobiontic																									
General Habitat	Lake																									
	Pond																									
	River																									
	Stream	X																								
	Other																									
Specific Habitat	Epibenthic																									
	Embenthic																									
	Epipelic																									
	Episabulic																									
	Epilithic																									
	Epixylous																									
	Epiphytic																									
Emergence	Winter																									
	Spring																									
	Summer																									
	Autumn																									
Feeding	Predator																									
	Herbivore																									
	Omnivore																									
	Scavenger																									
Other Water Chemistry, Toxicity, Misc.																										

Amphinemura venusta (Banks)

Parameters		98	104	109	111	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral			X		
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous			X		
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal			X		
	Oligothermal			X	X	
	Stenothermal					
	Metathermal					
	Eurythermal			X		
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					
	Pond					(98) 8800-9700' el
	River			X		(109) 6500-8000' el
	Stream			X	X	
	Other			X		(109) temporary str
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring					
	Summer		X	X	X	
	Autumn				X	
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Amphinemura wui (Claassen)

Parameters		References				Notes
		41	103	104	105	
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal	X				
	Stenothermal					
	Metathermal	X				
	Eurythermal					
Turbidity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					
	Pond					
	River					
	Stream	X	X		X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic		X			(103) leaf packs
Emergence	Winter					
	Spring	X		X		
	Summer	X	X	X		
	Autumn					
Feeding	Predator					
	Herbivore		X			
	Omnivore					
	Scavenger		X			
Other Water Chemistry, Toxicity, Misc.	(103,104) *N. sinuata* is a synonym.					

Arcynopteryx compacta (McLachlan)

Parameters		103	104	112	113	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
Turbidity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic	X				
General Habitat	Lake				X	(113) high elevations
	Pond					
	River			X		
	Stream			X	X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emergence	Winter					
	Spring	X		X		
	Summer	X	X		X	
	Autumn					
Feeding	Predator	X				
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.	(103) *P. compacta* is a synonym. (104) *P. lineata*, *P. slossonae* are synonyms.					

Atoperla ephyre (Newman)

Parameters		75	96	101	103	104	113	Notes
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous							
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic			X				
O_2	Euoxyphilous							
	Mesoxyphilous							
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
Turbid-ity	Eulichtophilous			X				
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic			X			X	
General Habitat	Lake							
	Pond							
	River	X	X					
	Stream			X			X	
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic							
	Epixylous							
	Epiphytic							
Emer-gence	Winter							
	Spring		X	X	X	X		
	Summer		X	X	X	X		
	Autumn							
Feeding	Predator			X			X	
	Herbivore							
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.								

Attaneuria ruralis (Hagen)

Parameters		96	101	103	104	113	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal						
	Oligothermal						
	Stenothermal						
	Metathermal						
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous		X				
	Rheobiontic			X			
General Habitat	Lake						
	Pond						
	River	X	X				
	Stream			X			
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic			X			
	Epixylous						
	Epiphytic		X				(101) debris
Emer-gence	Winter						
	Spring		X	X	X		
	Summer	X	X	X	X		
	Autumn						
Feeding	Predator		X	X		X	
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Beloneuria georgiana (Banks)

	Parameters	References																									Notes
		104																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutri-ent	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organ-ics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Tempera-ture	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbid-ity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River																										
	Stream																										
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emer-gence	Winter																										
	Spring	X																									
	Summer	X																									
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Bolshecapnia milami Nebeker & Gaufin

Parameters		References	Notes
		112	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River	X	
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Bolsheoapnia sasquatchi (Ricker)

Parameters		References																								Notes
		112																								
pH	Acidobiontic																									
	Acidophilous																									
	Neutral																									
	Alkaliphilous																									
	Alkalibiontic																									
	Indifferent																									
Nutri-ent	Eutrophic																									
	Mesotrophic																									
	Oligotrophic																									
	Dystrophic																									
Organ-ics	Saprophilic																									
	Facultative																									
	Saproxenous																									
	Saprophobic																									
O_2	Euoxyphilous																									
	Mesoxyphilous																									
	Oligoxyphilous																									
Tempera-ture	Euthermal																									
	Mesothermal																									
	Oligothermal																									
	Stenothermal																									
	Metathermal																									
	Eurythermal																									
Turbid-ity	Eulichtophilous																									
	Mesolichtophilous																									
	Polylichtophilous																									
	Oligolichtophilous																									
Current	Limnobiontic																									
	Limnophilous																									
	Indifferent																									
	Rheophilous																									
	Rheobiontic																									
General Habitat	Lake																									
	Pond																									
	River	X																								
	Stream	X																								
	Other																									
Specific Habitat	Epibenthic																									
	Embenthic																									
	Epipelic																									
	Episabulic																									
	Epilithic																									
	Epixylous																									
	Epiphytic																									
Emer-gence	Winter																									
	Spring	X																								
	Summer																									
	Autumn																									
Feeding	Predator																									
	Herbivore																									
	Omnivore																									
	Scavenger																									
Other Water Chemistry, Toxicity, Misc.																										

Bolshecapnia spenceri (Ricker)

Parameters		112	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal	X	
	Stenothermal	X	
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake	X	
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring		
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Calineuria californica (Banks)

Parameters		References													Notes
		11	43	72	78	80	81	82	100	102	103	110	112	122	
pH	Acidobiontic														
	Acidophilous														
	Neutral														
	Alkaliphilous					X									
	Alkalibiontic														
	Indifferent														
Nutri-ent	Eutrophic														
	Mesotrophic														
	Oligotrophic														
	Dystrophic														
Organ-ics	Saprophilic														
	Facultative														
	Saproxenous														
	Saprophobic														
O_2	Euoxyphilous		X												(49) O_2 consumption independent of body wt
	Mesoxyphilous														
	Oligoxyphilous														
Tempera-ture	Euthermal														(43) optimal temp 10-18°C fall 6-12°C winter 10-16°C spring 16-22°C summer
	Mesothermal	X	X											X	
	Oligothermal		X	X								X		X	
	Stenothermal														
	Metathermal	X												X	
	Eurythermal		X												
Turbid-ity	Eulichtophilous											X			
	Mesolichtophilous														
	Polylichtophilous														
	Oligolichtophilous														
Current	Limnobiontic														
	Limnophilous														
	Indifferent														
	Rheophilous														
	Rheobiontic		X				X	X			X				
General Habitat	Lake														(43,82) 500m el (72) low el (43,81,82) 500m el (78,80) 1900m el (122) 68-213m el
	Pond														
	River									X			X		
	Stream	X	X	X		X	X	X		X	X	X	X	X	
	Other														
Specific Habitat	Epibenthic														
	Embenthic														
	Epipelic														
	Episabulic														
	Epilithic										X				
	Epixylous														
	Epiphytic														
Emer-gence	Winter														
	Spring								X	X	X	X	X		
	Summer				X	X			X	X	X	X	X		
	Autumn														
Feeding	Predator	X	X		X		X	X			X			X	
	Herbivore							X							
	Omnivore														
	Scavenger							X							
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity														

Calliperla luctuosa (Banks)

Parameters		100	102	104	122	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal					
	Oligothermal				X	
	Stenothermal					
	Metathermal				X	
	Eurythermal					
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					(122) 213m el
	Pond					
	River		X			
	Stream		X		X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring		X			
	Summer	X	X	X		
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Capnia barberi Claassen

Parameters		80	100	104	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous	X			
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				(80) 1900m el
	Pond				
	River				
	Stream	X			
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter	X	X	X	
	Spring	X			
	Summer				
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.	(80) 30-35 ppm m.o. alkalinity				

Capnia californica Claassen

Parameters		References 100	104	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream			
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter	X		
	Spring		X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Capnia coloradensis Claassen

Parameters		54	55	109	112	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral			X		
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous			X		
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal			X		
	Oligothermal			X		
	Stenothermal					
	Metathermal					
	Eurythermal			X		
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic		X			
General Habitat	Lake					(54) <8500' el
	Pond					(109) 6750-9250' el
	River		X	X	X	
	Stream			X	X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring			X	X	
	Summer					
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Capnia confusa Claassen

Parameters		64	85	102	108	109	110	111	112	Notes
pH	Acidobiontic									
	Acidophilous									
	Neutral									
	Alkaliphilous					X				
	Alkalibiontic									
	Indifferent									
Nutri-ent	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Organ-ics	Saprophilic									
	Facultative									
	Saproxenous									
	Saprophobic									
O_2	Euoxyphilous					X				
	Mesoxyphilous									
	Oligoxyphilous									
Tempera-ture	Euthermal									
	Mesothermal					X				
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal					X				
Turbid-ity	Eulichtophilous									
	Mesolichtophilous									
	Polylichtophilous									
	Oligolichtophilous									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Lake									(85) 7600-7870' el (109) 6000-9250' el
	Pond									
	River					X	X			
	Stream			X		X		X	X	
	Other									
Specific Habitat	Epibenthic									
	Embenthic									
	Epipelic									
	Episabulic									
	Epilithic									
	Epixylous									
	Epiphytic									
Emer-gence	Winter	X			X	X			X	
	Spring	X		X	X	X	X	X	X	
	Summer								X	
	Autumn									
Feeding	Predator									
	Herbivore									
	Omnivore									
	Scavenger				X					
Other Water Chemistry, Toxicity, Misc.										

Capnia cygna Jewett

Parameters		References	Notes
		102	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Capnia decepta (Banks)

Parameters		References 104	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Capnia elevata Frison

Parameters		References: 102	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri- ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ- ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera- ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid- ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer- gence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Capnia elongata Claassen

Parameters		100	102	104	110	111	112	Notes
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous							
	Alkalibiontic							
	Indifferent							
Nutrient	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous							
	Mesoxyphilous							
	Oligoxyphilous							
Temperature	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
Turbidity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic							
General Habitat	Lake							
	Pond							
	River		X		X	X	X	
	Stream							
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic							
	Epixylous							
	Epiphytic							
Emergence	Winter	X	X	X	X	X	X	
	Spring	X	X		X	X	X	
	Summer							
	Autumn							
Feeding	Predator							
	Herbivore							
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.								

Capnia erecta Jewett

Parameters		102	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Capnia excavata Claassen

Parameters		23	72	100	102	104	110	122	Notes
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous								
	Alkalibiontic								
	Indifferent								
Nutri-ent	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organ-ics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous								
	Mesoxyphilous								
	Oligoxyphilous								
Tempera-ture	Euthermal								
	Mesothermal								
	Oligothermal							X	
	Stenothermal								
	Metathermal							X	
	Eurythermal								
Turbid-ity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
General Habitat	Lake								
	Pond								(122) 152, 213m el
	River		X		X				
	Stream	X			X		X	X	
	Other								
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic								
Emer-gence	Winter			X	X	X	X		
	Spring			X	X		X		
	Summer								
	Autumn								
Feeding	Predator								
	Herbivore								
	Omnivore								
	Scavenger								
Other Water Chemistry, Toxicity, Misc.									

Capnia fibula Claassen

Parameters		References 104	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		(104) 7000' el
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Capnia glabra Claassen

Parameters		80	100	102	104	111	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous	X					
	Alkalibiontic						
	Indifferent						
Nutrient	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Temperature	Euthermal						
	Mesothermal						
	Oligothermal						
	Stenothermal						
	Metathermal						
	Eurythermal						
Turbidity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						(80) 1900m el
	Pond						
	River						
	Stream	X		X		X	
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emergence	Winter	X	X	X	X	X	
	Spring	X		X		X	
	Summer						
	Autumn						
Feeding	Predator						
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity						

Capnia gracilaria Claassen

Parameters		30	54	55	64	72	85	100	102	104	109	110	111	112	Notes
pH	Acidobiontic														
	Acidophilous														
	Neutral														
	Alkaliphilous										X				
	Alkalibiontic														
	Indifferent														
Nutri-ent	Eutrophic														
	Mesotrophic														
	Oligotrophic														
	Dystrophic														
Organ-ics	Saprophilic														
	Facultative														
	Saproxenous														
	Saprophobic														
O_2	Euoxyphilous										X				
	Mesoxyphilous														
	Oligoxyphilous														
Tempera-ture	Euthermal														
	Mesothermal					X									
	Oligothermal					X					X				
	Stenothermal														
	Metathermal					X					X				
	Eurythermal														
Turbid-ity	Eulichtophilous														
	Mesolichtophilous														
	Polylichtophilous														
	Oligolichtophilous														
Current	Limnobiontic														
	Limnophilous														
	Indifferent														
	Rheophilous														
	Rheobiontic			X											
General Habitat	Lake														(54) <8500' el
	Pond														(55) <8000' el
	River			X		X			X		X		X	X	(64) 5000-8500' el
	Stream	X		X					X		X	X	X	X	(85) 9700-10560' el
	Other										X				see below
Specific Habitat	Epibenthic														
	Embenthic														
	Epipelic														
	Episabulic														
	Epilithic														
	Epixylous														(30) leaf packs,
	Epiphytic	X													detritus
Emer-gence	Winter							X	X		X	X	X	X	
	Spring				X			X	X	X	X	X	X	X	
	Summer				X										
	Autumn														
Feeding	Predator														
	Herbivore														
	Omnivore														
	Scavenger														

Other Water Chemistry, Toxicity, Misc.

General Habitat: (continued)

(109) 6250-8000' el

(109) temporary str

Capnia jewetti Frison

Parameters		References 102	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River	X	
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Capnia lacustra Jewett

Parameters		46	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake	X	
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Capnia licina Jewett

Parameters		References																									Notes
		102																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River																										
	Stream	X																									
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter																										
	Spring	X																									
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Capnia ligulata Hanson

Parameters		References: 111	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Capnia limata Frison

Parameters		54	55	109	111	112	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous			X			
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous			X			
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal			X			
	Oligothermal			X			
	Stenothermal						
	Metathermal						
	Eurythermal			X			
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic		X				
General Habitat	Lake						(54) <8500' el
	Pond						(109) 5250-7750' el
	River		X	X	X	X	
	Stream			X	X	X	
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emer-gence	Winter				X		
	Spring			X	X	X	
	Summer						
	Autumn						
Feeding	Predator						
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Capnia lineata Hanson

Parameters		100	102	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream		X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter			
	Spring		X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Capnia maculata Jewett

	Parameters	References																									Notes
		100																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River																										
	Stream																										
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter																										
	Spring	X																									
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Capnia manitoba Claassen

Parameters		42	104	106	113	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous	X				
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal					
	Oligothermal	X				
	Stenothermal					
	Metathermal	X				
	Eurythermal					
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					
	Pond					
	River					
	Stream	X		X	X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring	X	X			
	Summer					
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					

Other Water Chemistry, Toxicity, Misc.

(42) 164 ppm $CaCO_3$ alkalinity
278 ppm $CaCO_3$ hardness
440-480 μmhos conductivity

Capnia melia Frison

Parameters		23	102	110	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal			X	
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream	X	X	X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter	X	X		
	Spring	X	X	X	
	Summer				
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Capnia nana Claassen

Parameters		2	23	64	67	102	104	111	112	Notes
pH	Acidobiontic									
	Acidophilous									
	Neutral									
	Alkaliphilous									
	Alkalibiontic									
	Indifferent									
Nutri-ent	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Organ-ics	Saprophilic									
	Facultative									
	Saproxenous									
	Saprophobic									
O_2	Euoxyphilous									
	Mesoxyphilous									
	Oligoxyphilous									
Tempera-ture	Euthermal									
	Mesothermal									
	Oligothermal				X					
	Stenothermal				X					
	Metathermal									
	Eurythermal									
Turbid-ity	Eulichtophilous									
	Mesolichtophilous									
	Polylichtophilous									
	Oligolichtophilous									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Lake				X					(67,2) springs (2) seeps (164) 5000-8500' el (67) to 8500' el
	Pond									
	River					X		X	X	
	Stream		X		X			X	X	
	Other	X			X					
Specific Habitat	Epibenthic									
	Embenthic									
	Epipelic									
	Episabulic									
	Epilithic									
	Epixylous									
	Epiphytic									
Emer-gence	Winter		X	X	X	X		X	X	
	Spring		X	X	X	X	X	X	X	
	Summer									
	Autumn							X	X	
Feeding	Predator									
	Herbivore									
	Omnivore									
	Scavenger									
Other Water Chemistry, Toxicity, Misc.										

Capnia nearctica Banks

Parameters		References: 104	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Capnia oregona Frison

Parameters		References 102	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Capnia petila Jewett

Parameters		References 102	112	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River		X	
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter		X	
	Spring	X	X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Capnia promota Frison

Parameters		References 100	References 102	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream		X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter	X	X	
	Spring		X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Capnia quadrituberosa Hitchcock

Parameters		References	Notes
		100	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Capnia scobina Jewett

Parameters		References: 80	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous	X	
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		(80) 1900m el
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity		

Capnia sextuberculata Jewett

Parameters		References 102	112	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River		X	
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter		X	
	Spring	X	X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Capnia teresa Claassen

Parameters		References		Notes
		100	104	
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream			
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter			
	Spring	X		
	Summer			
	Autumn		X	
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Capnia tumida Claassen

Parameters		100	102	104	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream		X		
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter	X	X	X	
	Spring	X	X		
	Summer				
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Capnia uintahi Gaufin

Parameters		References																									Notes
		111																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutri-ent	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organ-ics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Tempera-ture	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbid-ity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River	X																									
	Stream	X																									
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emer-gence	Winter	X																									
	Spring	X																									
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Capnia umpqua Frison

Parameters		100	102	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River		X	
	Stream		X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter	X	X	
	Spring	X	X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Capnia utahensis Gaufin & Jewett

Parameters		References	Notes
		111	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Capnia venosa (Banks)

Parameters		102	104	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream	X		
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring	X	X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Capnia vernalis Newport

Parameters		96	99	101	103	104	106	Notes
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous							
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous							
	Mesoxyphilous							
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
Turbid-ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic							
General Habitat	Lake							
	Pond							
	River						X	
	Stream	X		X	X			
	Other							
Specific Habitat	Epibenthic							(101,103) leaf packs
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic							
	Epixylous							
	Epiphytic			X	X			
Emer-gence	Winter		X	X	X			
	Spring	X		X	X	X		
	Summer					X		
	Autumn							
Feeding	Predator							
	Herbivore			X	X			
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.								

Capnia wanica Frison

Parameters		References																									Notes
		III																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River	X																									
	Stream	X																									
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter	X																									
	Spring	X																									
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Capnia willametta Jewett

Parameters		References																								Notes
		102																								
pH	Acidobiontic																									
	Acidophilous																									
	Neutral																									
	Alkaliphilous																									
	Alkalibiontic																									
	Indifferent																									
Nutrient	Eutrophic																									
	Mesotrophic																									
	Oligotrophic																									
	Dystrophic																									
Organics	Saprophilic																									
	Facultative																									
	Saproxenous																									
	Saprophobic																									
O_2	Euoxyphilous																									
	Mesoxyphilous																									
	Oligoxyphilous																									
Temperature	Euthermal																									
	Mesothermal																									
	Oligothermal																									
	Stenothermal																									
	Metathermal																									
	Eurythermal																									
Turbidity	Eulichtophilous																									
	Mesolichtophilous																									
	Polylichtophilous																									
	Oligolichtophilous																									
Current	Limnobiontic																									
	Limnophilous																									
	Indifferent																									
	Rheophilous																									
	Rheobiontic																									
General Habitat	Lake																									
	Pond																									
	River																									
	Stream	X																								
	Other																									
Specific Habitat	Epibenthic																									
	Embenthic																									
	Epipelic																									
	Episabulic																									
	Epilithic																									
	Epixylous																									
	Epiphytic																									
Emergence	Winter	X																								
	Spring																									
	Summer																									
	Autumn																									
Feeding	Predator																									
	Herbivore																									
	Omnivore																									
	Scavenger																									
Other Water Chemistry, Toxicity, Misc.																										

Capnia zukeli Hanson

Parameters		102	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Chernokrilus erratus (Claassen)

Parameters		References 100	104	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring		X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.	(104) *P. venosa* is a synonym.			

Chernokrilus misnomus (Claassen)

Parameters		References 102	104	122	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal			X	
	Stenothermal				
	Metathermal			X	
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				(122) 213m el
	Pond				
	River	X			
	Stream	X		X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring	X			
	Summer	X	X		
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.	(104) *P. obscura* is a synonym.				

Claassenia sabulosa (Banks)

Parameters		References														Notes
		4	26	30	54	55	71	85	102	104	108	109	111	112	116	
pH	Acidobiontic															
	Acidophilous															
	Neutral											X				
	Alkaliphilous														X	
	Alkalibiontic															
	Indifferent															
Nutri-ent	Eutrophic														X	
	Mesotrophic															
	Oligotrophic															
	Dystrophic															
Organ-ics	Saprophilic															
	Facultative															
	Saproxenous															
	Saprophobic															
O_2	Euoxyphilous											X				
	Mesoxyphilous														X	
	Oligoxyphilous															
Tempera-ture	Euthermal															
	Mesothermal											X				
	Oligothermal	X										X				
	Stenothermal															
	Metathermal	X														
	Eurythermal											X				
Turbid-ity	Eulichtophilous															
	Mesolichtophilous															
	Polylichtophilous															
	Oligolichtophilous															
Current	Limnobiontic															
	Limnophilous															
	Indifferent															
	Rheophilous					X										
	Rheobiontic					X	X									
General Habitat	Lake															(54) 6700-8800' el
	Pond															(55) <8000' el
	River		X	X		X	X		X			X	X	X		(85) 7600' el
	Stream	X		X		X	X		X			X	X	X		(109) 5750-7750' el
	Other					X										(55) temporary str
Specific Habitat	Epibenthic															
	Embenthic															
	Epipelic															
	Episabulic			X												
	Epilithic						X									
	Epixylous															
	Epiphytic															
Emer-gence	Winter															
	Spring															
	Summer	X	X						X	X	X	X	X	X		
	Autumn		X						X		X	X	X	X		
Feeding	Predator		X				X				X					
	Herbivore															
	Omnivore															
	Scavenger															
Other Water Chemistry, Toxicity, Misc.	(30,104) *C. arctica* and *P. languida* are synonyms. (116) TL_m^{96} = .05 ppm malathion															

Cultus aestivalis (Needham & Claassen)

Parameters		26	34	35	54	55	102	103	104	109	110	111	112	117	118	Notes
pH	Acidobiontic															
	Acidophilous															(117,118) TL_m^{96} = pH 5.15
	Neutral													X	X	
	Alkaliphilous		X							X						
	Alkalibiontic															
	Indifferent															
Nutri-ent	Eutrophic															
	Mesotrophic															
	Oligotrophic															
	Dystrophic															
Organ-ics	Saprophilic															
	Facultative															
	Saproxenous															
	Saprophobic															
O_2	Euoxyphilous		X							X						
	Mesoxyphilous															
	Oligoxyphilous															
Tempera-ture	Euthermal															
	Mesothermal									X						(34,117,118) TL_m^{96} = 16.15°C
	Oligothermal		X							X				X	X	
	Stenothermal		X													
	Metathermal															
	Eurythermal									X						
Turbid-ity	Eulichtophilous		X													
	Mesolichtophilous															
	Polylichtophilous															
	Oligolichtophilous															
Current	Limnobiontic															
	Limnophilous															
	Indifferent															
	Rheophilous					X										
	Rheobiontic					X										
General Habitat	Lake															
	Pond															(54) 6900-9000' el
	River	X				X	X			X	X	X	X			(55) <8000' el
	Stream		X	X		X				X		X	X			(109) 5250-8000' el
	Other															
Specific Habitat	Epibenthic															
	Embenthic															
	Epipelic															
	Episabulic															
	Epilithic															
	Epixylous															
	Epiphytic															
Emer-gence	Winter															
	Spring	X					X			X		X	X			
	Summer	X					X			X	X	X	X			
	Autumn															
Feeding	Predator	X						X								
	Herbivore															
	Omnivore															
	Scavenger															

Other Water Chemistry, Toxicity, Misc.

(110) *D. fraseri* is a synonym.

(34) 135 ppm $CaCO_3$ alkalinity
1-2 ppm CO_2

Cultus decisus (Walker)

Parameters		59	60	103	104	113	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous		X				
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous		X				(60) 9.2-14.8 mg/l O_2 95-11.5% saturation
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal		X				
	Oligothermal		X				
	Stenothermal						
	Metathermal						
	Eurythermal		X				
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic	X					
General Habitat	Lake						
	Pond						
	River						
	Stream	X					
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emer-gence	Winter						
	Spring		X	X	X		
	Summer			X			
	Autumn						
Feeding	Predator	X	X			X	
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.	(60) 100-229 mg/l $CaCO_3$ alkalinity 0-10 mg/l free CO_2 (103,104) *P. verticalis* is a synonym.						

Cultus pilatus (Frison)

Parameters		References			Notes
		102	110	112	
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal		X		
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River	X	X	X	
	Stream	X	X	X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring	X	X	X	
	Summer	X		X	
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Cultus tostonus (Ricker)

Parameters		100	102	108	112	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					(100) 2000-5000' el
	Pond					
	River		X		X	
	Stream		X		X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring	X	X	X	X	
	Summer		X	X	X	
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Despaxia augusta (Banks)

Parameters		23	72	100	102	104	110	112	122	Notes
pH	Acidobiontic									
	Acidophilous									
	Neutral									
	Alkaliphilous									
	Alkalibiontic									
	Indifferent									
Nutri-ent	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Organ-ics	Saprophilic									
	Facultative									
	Saproxenous									
	Saprophobic									
O_2	Euoxyphilous									
	Mesoxyphilous									
	Oligoxyphilous									
Tempera-ture	Euthermal									
	Mesothermal									
	Oligothermal								X	
	Stenothermal									
	Metathermal								X	
	Eurythermal									
Turbid-ity	Eulichtophilous									
	Mesolichtophilous									
	Polylichtophilous									
	Oligolichtophilous									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Lake									(72) all elevations (110) to high el (122) 213,198,152m el
	Pond									
	River									
	Stream	X	X	X	X		X	X	X	
	Other									
Specific Habitat	Epibenthic									
	Embenthic									
	Epipelic									
	Episabulic									
	Epilithic									
	Epixylous									
	Epiphytic									
Emer-gence	Winter							X		
	Spring							X		
	Summer	X				X	X	X		
	Autumn	X		X	X		X	X		
Feeding	Predator									
	Herbivore									
	Omnivore									
	Scavenger									
Other Water Chemistry, Toxicity, Misc.	(72,104,110) *L. glabra* is a synonym.									

Diploperla duplicata (Banks)

Parameters		28	75	101	104	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous	X	X			
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic	X	X			
O_2	Euoxyphilous	X	X			
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal	X	X			
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal		X			
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					
	Pond					
	River					
	Stream	X	X	X		
	Other					
Specific Habitat	Epibenthic					(101) leaf packs
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic			X		
Emer-gence	Winter					
	Spring				X	
	Summer				X	
	Autumn					
Feeding	Predator			X		
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Diura knowltoni (Frison)

Parameters		36	54	55	79	80	85	102	108	109	111	112	117	118	Notes
pH	Acidobiontic														
	Acidophilous														
	Neutral									X					
	Alkaliphilous	X			X	X									
	Alkalibiontic														
	Indifferent														
Nutri-ent	Eutrophic														
	Mesotrophic														
	Oligotrophic														
	Dystrophic														
Organ-ics	Saprophilic														
	Facultative														
	Saproxenous														
	Saprophobic														
O_2	Euoxyphilous									X					(36,117,118) TL_m^{96} = 3.6 mg/l O_2 see below
	Mesoxyphilous	X											X	X	
	Oligoxyphilous														
Tempera-ture	Euthermal														
	Mesothermal	X			X					X					
	Oligothermal				X					X					
	Stenothermal														
	Metathermal														
	Eurythermal				X					X					
Turbid-ity	Eulichtophilous														
	Mesolichtophilous														
	Polylichtophilous														
	Oligolichtophilous														
Current	Limnobiontic														
	Limnophilous														
	Indifferent														
	Rheophilous				X										
	Rheobiontic			X											
General Habitat	Lake														(54) 7200-10300' el (79) 1900-2000m el (80) 1900m el (85) 7800-7870' el (109) 6500-9250' el
	Pond														
	River			X				X		X	X	X			
	Stream	X		X		X		X		X	X	X			
	Other														
Specific Habitat	Epibenthic														
	Embenthic														
	Epipelic														
	Episabulic														
	Epilithic														
	Epixylous														
	Epiphytic														
Emer-gence	Winter														
	Spring				X	X		X	X	X	X	X			
	Summer				X			X		X	X	X			
	Autumn														
Feeding	Predator				X										
	Herbivore														
	Omnivore								X						
	Scavenger														

Other Water Chemistry, Toxicity, Misc.

O_2 (continued)

(36,117,118) 32% saturation

(80) 30-75 ppm m.o. alkalinity

Doddsia occidentalis (Banks)

Parameters		23	72	98	100	102	104	108	110	111	112	Notes
pH	Acidobiontic											
	Acidophilous											
	Neutral											
	Alkaliphilous											
	Alkalibiontic											
	Indifferent											
Nutri-ent	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Organ-ics	Saprophilic											
	Facultative											
	Saproxenous											
	Saprophobic											
O_2	Euoxyphilous											
	Mesoxyphilous											
	Oligoxyphilous											
Tempera-ture	Euthermal											
	Mesothermal											
	Oligothermal		X						X			
	Stenothermal											
	Metathermal											
	Eurythermal											
Turbid-ity	Eulichtophilous											
	Mesolichtophilous											
	Polylichtophilous											
	Oligolichtophilous											
Current	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous											
	Rheobiontic											
General Habitat	Lake											(72) to mid elevation
	Pond											(98) 8800-9200' el
	River								X	X	X	
	Stream	X	X									
	Other											
Specific Habitat	Epibenthic											
	Embenthic											
	Epipelic											
	Episabulic											
	Epilithic											
	Epixylous											
	Epiphytic											
Emer-gence	Winter							X		X	X	
	Spring	X			X			X	X	X	X	
	Summer						X				X	
	Autumn											
Feeding	Predator											
	Herbivore							X				
	Omnivore											
	Scavenger											
Other Water Chemistry, Toxicity, Misc.												

Doroneuria theodora (Needham & Claassen)

Parameters		100	102	103	104	111	112	122	Notes
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous								
	Alkalibiontic								
	Indifferent								
Nutri-ent	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organ-ics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous								
	Mesoxyphilous								
	Oligoxyphilous								
Tempera-ture	Euthermal								
	Mesothermal								
	Oligothermal							X	
	Stenothermal								
	Metathermal							X	
	Eurythermal								
Turbid-ity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic			X					
General Habitat	Lake								(122) 213,198m el
	Pond								
	River		X			X	X		
	Stream		X	X		X	X	X	
	Other								
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic			X					
	Epixylous								
	Epiphytic								
Emer-gence	Winter								
	Spring	X			X		X		
	Summer	X	X	X	X	X	X		
	Autumn		X			X	X		
Feeding	Predator			X					
	Herbivore								
	Omnivore								
	Scavenger								
Other Water Chemistry, Toxicity, Misc.									

Ecooptura xanthenes (Newman)

Parameters		89	104	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous	X		
	Saprophobic			
O_2	Euoxyphilous	X		
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream			
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring		X	
	Summer		X	
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Eucapnopsis brevicauda Classen

Parameters		References																									Notes
		54	55	64	72	80	85	98	100	102	104	108	109	110	111	112	122										
pH	Acidobiontic																										
	Acidophilous																										
	Neutral												X														
	Alkaliphilous					X																					
	Alkalibiontic																										
	Indifferent																										
Nutri-ent	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organ-ics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous												X														
	Mesoxyphilous																										
	Oligoxyphilous																										
Tempera-ture	Euthermal																										
	Mesothermal												X														
	Oligothermal												X				X										
	Stenothermal																										
	Metathermal																X										
	Eurythermal												X														
Turbid-ity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										(54) >8500' el
	Pond																										(64) <6500' el
	River		X										X	X	X	X											(72) low elevations
	Stream				X	X				X			X	X	X	X	X										(80) 1900m el
	Other																X										see below
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emer-gence	Winter								X	X			X		X	X											
	Spring			X		X			X	X		X	X	X	X	X											
	Summer					X							X			X											
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										

Other Water Chemistry, Toxicity, Misc.

General Habitat (continued)

(85) 9700' el
(98) 8800-9200' el
(109) 6750-9250' el
(110) to 1700' el
(122) 213,198,152m el

(122) spring

(80) 30-75 ppm m.o. alkalinity

Frisonia picticeps (Hanson)

Parameters		79	80	102	110	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous	X	X			
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal	X				
	Oligothermal	X				
	Stenothermal					
	Metathermal					
	Eurythermal	X				
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic	X				
General Habitat	Lake					(79) 1670-2350m el
	Pond					(80) 1900m el
	River			X	X	
	Stream	X	X		X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring	X	X	X	X	
	Summer	X	X	X		
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore	X				
	Scavenger					

Other Water Chemistry, Toxicity, Misc.

(80) 30-35 ppm $CaCO_3$ m.o. alkalinity

(110) *F. walkeri* is a synonym.

Hastaperla brevis (Banks)

Parameters		28	77	83	96	101	103	104	113	Notes
pH	Acidobiontic									
	Acidophilous			X						
	Neutral									
	Alkaliphilous	X								
	Alkalibiontic									
	Indifferent									
Nutrient	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Organics	Saprophilic									
	Facultative									
	Saproxenous									
	Saprophobic	X								
O_2	Euoxyphilous	X		X						
	Mesoxyphilous			X						
	Oligoxyphilous									
Temperature	Euthermal									
	Mesothermal	X		X						
	Oligothermal									
	Stenothermal									
	Metathermal	X		X						
	Eurythermal									
Turbidity	Eulichtophilous									
	Mesolichtophilous									
	Polylichtophilous									
	Oligolichtophilous									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic			X			X			
General Habitat	Lake									
	Pond									(83) 1281-1400' el
	River									
	Stream	X		X	X	X				
	Other									
Specific Habitat	Epibenthic									
	Embenthic									
	Epipelic									
	Episabulic									
	Epilithic									
	Epixylous									
	Epiphytic					X			X	(101,113) leaf packs
Emergence	Winter									
	Spring			X	X		X	X		
	Summer			X	X		X	X		
	Autumn									
Feeding	Predator		X				X			
	Herbivore					X			X	
	Omnivore									
	Scavenger									
Other Water Chemistry, Toxicity, Misc.	(101,103,104) *C. cydippe* is a synonym.									

Hastaperla chilnualna Ricker

	Parameters	80	100	102	122	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous	X				
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal					
	Oligothermal				X	
	Stenothermal					
	Metathermal				X	
	Eurythermal					
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					(100) 4000' el (122) 68m el (80) 1900m el
	Pond					
	River					
	Stream	X		X	X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring		X			
	Summer	X	X	X		
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity					

Hastaperla orpha (Frison)

Parameters		References																									Notes
		96																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous	X																									
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River	X																									
	Stream	X																									
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter																										
	Spring	X																									
	Summer	X																									
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Helopicus subvarians (Banks)

Parameters		41	83	86	104	Notes
pH	Acidobiontic					
	Acidophilous		X			
	Neutral			X		
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous		X	X		(86) 8.5-10.6 ppm O_2
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal		X			
	Oligothermal			X		
	Stenothermal					
	Metathermal			X		
	Eurythermal					
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic		X	X		
General Habitat	Lake					(83) 1281-1400' el
	Pond					
	River					
	Stream		X	X		
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring	X	X		X	
	Summer	X	X			
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					

Other Water Chemistry, Toxicity, Misc.

(86) 26.7-33.7 ppm $CaCO_3$ alkalinity
2.7-4.5 ppm free CO_2
68-86 ppm t. hardness
0.8-1.8 ppm nitrate N
123-164 μmhos conductivity

(104) *P. postica* is a synonym.

Hesperoperla pacifica (Banks)

Parameters		References																									Notes
		1	4	11	15	26	29	30	33	36	37	53	54	55	57	71	72	81	98	102	103	104	108	109	110	111	
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																							X			
	Alkaliphilous						X			X	X																
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic										X																
O_2	Euoxyphilous						X									X								X			(36,117,118)TL_m^{96} =
	Mesoxyphilous							X		X	X	X															1.6 mg/l O_2, 14% sat
	Oligoxyphilous																										see below
Temperature	Euthermal																										
	Mesothermal			X			X		X		X						X							X	X		(37) 40-50°F optimal T°
	Oligothermal		X							X		X	X				X							X			
	Stenothermal																										
	Metathermal		X	X							X		X				X										
	Eurythermal																							X			
Turbidity	Eulichtophilous						X				X																
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous													X													
	Rheobiontic					X								X		X					X						
General Habitat	Lake																										(29) 9500' el
	Pond																										(54) 6900-10300' el
	River				X	X	X							X						X						X	(98) 6900-11000' el
	Stream	X	X	X				X	X	X	X			X			X			X	X				X	X	(109) 6500-7250' el
	Other													X													see below
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic							X	X												X						
	Epixylous																										
	Epiphytic							X																			
Emergence	Winter																										
	Spring		X				X													X	X	X	X	X	X	X	
	Summer		X			X	X													X	X	X		X	X	X	
	Autumn																			X				X			
Feeding	Predator	X		X	X	X		X	X	X						X		X					X				
	Herbivore																										
	Omnivore																										
	Scavenger				X																						

Other Water Chemistry, Toxicity, Misc.

O_2 (continued) (36) 5.8 mg/l O_2, 111 days, 50% surv
3.0 mg/l O_2, 24 days, 50% surv
3.0 mg/l O_2, 41 days, 20% surv

(37) at 60-70°F
2.5 ppm O_2, 24 hr, 100% mort
4 ppm O_2, 24 hr, 0% mort

(53) 1 cc/l O_2, 10°C, 29% mort in 72 hr
25% mort in 96 hr

(57) $TL_m^{30\ day}$ for co-ral, methylparathion, toxaphene, lindane

General Habitat (continued)
(110) to 2000' el
(122) 152m el

(155) temporary str

Hesperoperla pacifica (Banks) cont.

Parameters		112	116	117	118	119	120	121	122	Notes
pH	Acidobiontic									(120,117,118)
	Acidophilous									TL_m^{90} = pH 5.8
	Neutral						X			TL_m^{96} = pH 3.8, see below
	Alkaliphilous		X	X	X	X		X		
	Alkalibiontic									
	Indifferent									
Nutrient	Eutrophic		X							
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Organics	Saprophilic									
	Facultative									
	Saproxenous									
	Saprophobic									
O_2	Euoxyphilous			X	X	X		X		
	Mesoxyphilous		X							
	Oligoxyphilous									
Temperature	Euthermal									(117,118)
	Mesothermal			X	X			X		TL_m^{96} = 27°C, 70% surv
	Oligothermal							X		15°C, 31 days,
	Stenothermal									50% surv
	Metathermal							X		
	Eurythermal									
Turbidity	Eulichtophilous									
	Mesolichtophilous									
	Polylichtophilous									
	Oligolichtophilous									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic								X	
General Habitat	Lake									
	Pond									
	River									
	Stream									
	Other									
Specific Habitat	Epibenthic									
	Embenthic									
	Epipelic									
	Episabulic									
	Epilithic									
	Epixylous									
	Epiphytic									
Emergence	Winter									
	Spring	X								
	Summer	X								
	Autumn	X								
Feeding	Predator			X	X					
	Herbivore									
	Omnivore									
	Scavenger									

Other Water Chemistry, Toxicity, Misc.

(29) 4.5-10.0 ppm $CaCO_3$ alkalinity
0.5- 2.5 ppm CO_2

(119) 4,5,10,15,20,25,30 day TL_m for DDT, di-syston, dylox, malathion, parathion

(121) 48,72,96 hr TL_m for DDT, aldrin, dieldrin, endrin, parathion, malathion, guthion, bayer-29493, di-syston, dylox

(116) TL_m^{96} DDT, malathion, parathion

(pH) continued
2.0×10^{-4} M H_2SO_4

TL_m^{96} = pH 3.6, 2.5×10^{-4} M HCl

(104) *A. pumila* is a synonym.

Hydroperla crosbyi (Needham & Claassen)

Parameters		References						Notes
		75	101	104	113	114	115	
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous	X						
	Alkalibiontic							
	Indifferent							
Nutrient	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic	X						
O_2	Euoxyphilous	X						
	Mesoxyphilous							
	Oligoxyphilous							
Temperature	Euthermal							
	Mesothermal	X					X	
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal	X						
Turbidity	Eulichtophilous							
	Mesolichtophilous		X				X	
	Polylichtophilous					X		
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous		X		X			
	Rheobiontic							
General Habitat	Lake							(114,115) intermittent str
	Pond							
	River							
	Stream	X	X		X	X	X	
	Other					X	X	
Specific Habitat	Epibenthic							(101,113) leaf packs
	Embenthic							(114) debris
	Epipelic							
	Episabulic							
	Epilithic					X		
	Epixylous							
	Epiphytic		X		X	X		
Emergence	Winter					X		
	Spring		X			X		
	Summer							
	Autumn							
Feeding	Predator				X			
	Herbivore							
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.								

Hydroperla fugitans (Needham & Claassen)

Parameters		101	104	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River	X		
	Stream			
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring	X	X	
	Summer			
	Autumn			
Feeding	Predator	X		
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.	(101) *H. harti* is a synonym.			

Isocapnia abbreviata Frison

Parameters		References 100	References 102	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River		X	
	Stream		X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter		X	
	Spring	X	X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Isocapnia agassizi Ricker

Parameters		References		Notes
		102	110	
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River	X	X	
	Stream			
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring	X	X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Isocapnia crinita (Needham & Claassen)

Parameters		54	55	84	104	108	111	112	Notes
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous								
	Alkalibiontic								
	Indifferent								
Nutri-ent	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organ-ics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous								
	Mesoxyphilous								
	Oligoxyphilous								
Tempera-ture	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
Turbid-ity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
General Habitat	Lake								(54) <8500' el
	Pond								
	River		X	X			X		
	Stream						X	X	
	Other								
Specific Habitat	Epibenthic								
	Embenthic			X					
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic								
Emer-gence	Winter								
	Spring				X	X	X	X	
	Summer								
	Autumn								
Feeding	Predator								
	Herbivore								
	Omnivore								
	Scavenger								
Other Water Chemistry, Toxicity, Misc.									

Isocapnia grandis (Banks)

Parameters		References									Notes
		72	84	100	102	104	108	110	111	112	
pH	Acidobiontic										
	Acidophilous										
	Neutral										
	Alkaliphilous										
	Alkalibiontic										
	Indifferent										
Nutri-ent	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Organ-ics	Saprophilic										
	Facultative										
	Saproxenous										
	Saprophobic										
O_2	Euoxyphilous										
	Mesoxyphilous										
	Oligoxyphilous										
Tempera-ture	Euthermal										
	Mesothermal										
	Oligothermal	X									
	Stenothermal										
	Metathermal										
	Eurythermal										
Turbid-ity	Eulichtophilous										
	Mesolichtophilous										
	Polylichtophilous										
	Oligolichtophilous										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic										
General Habitat	Lake										(72) low elevations
	Pond										
	River	X	X		X			X	X	X	
	Stream				X						
	Other										
Specific Habitat	Epibenthic										
	Embenthic		X								
	Epipelic										
	Episabulic										
	Epilithic										
	Epixylous										
	Epiphytic										
Emer-gence	Winter			X	X						
	Spring			X	X	X	X	X	X	X	
	Summer										
	Autumn										
Feeding	Predator										
	Herbivore										
	Omnivore										
	Scavenger										
Other Water Chemistry, Toxicity, Misc.	(72) *I. fumigata* is a synonym.										

Isocapnia hyalita Ricker

Parameters		References: 112	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Isocapnia missourii Ricker

Parameters		84	108	111	112	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					
	Pond					
	River	X			X	
	Stream			X	X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic	X				
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring		X	X	X	
	Summer					
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Isocapnia spenceri Ricker

Parameters		References			Notes
		100	102	110	
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River		X	X	
	Stream				
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter	X			
	Spring	X	X	X	
	Summer				
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Isocapnia vedderensis (Ricker)

Parameters		102	108	110	111	112	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal						
	Oligothermal						
	Stenothermal						
	Metathermal						
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						
	Pond						
	River	X		X	X	X	
	Stream	X			X	X	
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emer-gence	Winter						
	Spring	X	X	X	X	X	
	Summer						
	Autumn						
Feeding	Predator						
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Isogenoides colubrinus (Hagen)

Parameters		References							Notes
		102	103	104	108	109	111	112	
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous					X			
	Alkalibiontic								
	Indifferent								
Nutrient	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous					X			
	Mesoxyphilous								
	Oligoxyphilous								
Temperature	Euthermal								
	Mesothermal					X			
	Oligothermal					X			
	Stenothermal								
	Metathermal								
	Eurythermal					X			
Turbidity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
General Habitat	Lake								(109) 5250-6000' el
	Pond								
	River	X				X	X	X	
	Stream						X	X	
	Other								
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic								
Emergence	Winter								
	Spring	X	X	X	X	X	X	X	
	Summer		X		X	X	X	X	
	Autumn								
Feeding	Predator		X		X				
	Herbivore								
	Omnivore								
	Scavenger								
Other Water Chemistry, Toxicity, Misc.									

Isogenoides elongatus (Hagen)

	Parameters	54	55	71	98	102	104	109	111	112	Notes
pH	Acidobiontic										
	Acidophilous										
	Neutral										
	Alkaliphilous										
	Alkalibiontic										
	Indifferent										
Nutri-ent	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Organ-ics	Saprophilic										
	Facultative										
	Saproxenous										
	Saprophobic										
O_2	Euoxyphilous										
	Mesoxyphilous										
	Oligoxyphilous										
Tempera-ture	Euthermal										
	Mesothermal										
	Oligothermal										
	Stenothermal										
	Metathermal										
	Eurythermal										
Turbid-ity	Eulichtophilous										
	Mesolichtophilous										
	Polylichtophilous										
	Oligolichtophilous										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous		X								
	Rheobiontic			X							
General Habitat	Lake										(54) 6900-9400' el (55) <8000' el (98) 5700-10700' el (104) 4800' el see below
	Pond										
	River		X			X		X	X	X	
	Stream		X	X							
	Other		X								
Specific Habitat	Epibenthic										
	Embenthic										
	Epipelic										
	Episabulic										
	Epilithic			X							
	Epixylous										
	Epiphytic										
Emer-gence	Winter										
	Spring					X	X	X	X	X	
	Summer						X	X	X	X	
	Autumn										
Feeding	Predator			X							
	Herbivore										
	Omnivore										
	Scavenger										

Other Water Chemistry, Toxicity, Misc.

General Habitat (continued)

(109) 6000-7250' el

(55) temporary str

Isogenoides frontalis (Newman)

	Parameters	References 3	5	6	56	68	77	96	Notes
pH	Acidobiontic								(5,6) pH7-100% surv
	Acidophilous								pH2- 0% surv
	Neutral		X	X					
	Alkaliphilous					X			TL_m^{96} = pH 3.68
	Alkalibiontic								
	Indifferent								(6) TL_m^{30} = pH 4.50
Nutrient	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous		X	X		X			(6) 8.47-8.70 mg/l O_2
	Mesoxyphilous								
	Oligoxyphilous								
Temperature	Euthermal								(68) TL_m^{96} = 22.5°C
	Mesothermal			X					
	Oligothermal	X	X			X			
	Stenothermal								
	Metathermal		X						
	Eurythermal			X					
Turbidity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic	X						X	
General Habitat	Lake								
	Pond								
	River								
	Stream	X	X	X	X			X	
	Other								
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic								
Emergence	Winter								
	Spring	X							
	Summer	X							
	Autumn								
Feeding	Predator						X		
	Herbivore								
	Omnivore								
	Scavenger								

Other Water Chemistry, Toxicity, Misc.

(68) 40 ppm t. alkalinity
3-5 ppm CO_2
35-40 ppm $CaCO_3$ hardness

Isogenoides olivaceus (Walker)

Parameters		References																								Notes
		3																								
pH	Acidobiontic																									
	Acidophilous																									
	Neutral																									
	Alkaliphilous																									
	Alkalibiontic																									
	Indifferent																									
Nutrient	Eutrophic																									
	Mesotrophic																									
	Oligotrophic																									
	Dystrophic																									
Organics	Saprophilic																									
	Facultative																									
	Saproxenous																									
	Saprophobic																									
O_2	Euoxyphilous																									
	Mesoxyphilous																									
	Oligoxyphilous																									
Temperature	Euthermal																									
	Mesothermal																									
	Oligothermal	X																								
	Stenothermal																									
	Metathermal																									
	Eurythermal																									
Turbidity	Eulichtophilous																									
	Mesolichtophilous																									
	Polylichtophilous																									
	Oligolichtophilous																									
Current	Limnobiontic																									
	Limnophilous																									
	Indifferent																									
	Rheophilous																									
	Rheobiontic																									
General Habitat	Lake																									
	Pond																									
	River																									
	Stream	X																								
	Other																									
Specific Habitat	Epibenthic																									
	Embenthic																									
	Epipelic																									
	Episabulic																									
	Epilithic																									
	Epixylous																									
	Epiphytic																									
Emergence	Winter																									
	Spring	X																								
	Summer	X																								
	Autumn																									
Feeding	Predator																									
	Herbivore																									
	Omnivore																									
	Scavenger																									
Other Water Chemistry, Toxicity, Misc.																										

Isogenoides varians (Walsh)

Parameters		96	101	104	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream	X			
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring		X	X	
	Summer				
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Isogenoides zionensis Hanson

Parameters		26	85	111	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				(85) 7870' el
	Pond				
	River	X		X	
	Stream				
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring	X		X	
	Summer			X	
	Autumn				
Feeding	Predator	X			
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Isoperla bellona Banks

Parameters		References	Notes
		104	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Isoperla bilineata (Say)

Parameters		3	28	75	77	96	101	103	104	113	Notes
pH	Acidobiontic										
	Acidophilous										
	Neutral										
	Alkaliphilous		X	X							
	Alkalibiontic										
	Indifferent										
Nutri-ent	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Organ-ics	Saprophilic										
	Facultative										
	Saproxenous										
	Saprophobic		X	X							
O_2	Euoxyphilous		X	X							
	Mesoxyphilous										
	Oligoxyphilous										
Tempera-ture	Euthermal										
	Mesothermal		X	X							
	Oligothermal										
	Stenothermal										
	Metathermal		X	X							
	Eurythermal										
Turbid-ity	Eulichtophilous										
	Mesolichtophilous										
	Polylichtophilous										
	Oligolichtophilous										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic										
General Habitat	Lake										
	Pond										
	River	X				X	X				
	Stream	X	X	X				X			
	Other										
Specific Habitat	Epibenthic										
	Embenthic										
	Epipelic										
	Episabulic										
	Epilithic					X					
	Epixylous										
	Epiphytic					X	X				
Emer-gence	Winter										
	Spring	X				X	X	X			
	Summer					X	X				
	Autumn										
Feeding	Predator							X		X	
	Herbivore									X	
	Omnivore				X						
	Scavenger										
Other Water Chemistry, Toxicity, Misc.											

Isoperla burksi Frison

Parameters		94	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic	X	
General Habitat	Lake		
	Pond		
	River	X	
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic	X	
Emer-gence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator	X	
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Isoperla clio (Newman)

Parameters		3	28	42	59	60	77	94	101	103	104	113	115	Notes
pH	Acidobiontic													
	Acidophilous													
	Neutral													
	Alkaliphilous		X		X	X								
	Alkalibiontic													
	Indifferent													
Nutri-ent	Eutrophic													
	Mesotrophic													
	Oligotrophic													
	Dystrophic													
Organ-ics	Saprophilic													
	Facultative													
	Saproxenous													
	Saprophobic	X	X											
O_2	Euoxyphilous		X		X	X								(59) 8-15 mg/l O_2, >85% sat see below
	Mesoxyphilous													
	Oligoxyphilous													
Tempera-ture	Euthermal													
	Mesothermal		X			X							X	
	Oligothermal	X			X	X								
	Stenothermal													
	Metathermal		X		X									
	Eurythermal					X								
Turbid-ity	Eulichtophilous	X												
	Mesolichtophilous												X	
	Polylichtophilous													
	Oligolichtophilous													
Current	Limnobiontic													
	Limnophilous													
	Indifferent													
	Rheophilous													
	Rheobiontic				X									
General Habitat	Lake													(115) intermittent str (3) temporary str (59) 130-145m el
	Pond													
	River							X						
	Stream	X	X		X				X				X	
	Other	X											X	
Specific Habitat	Epibenthic													(101,113) leaf packs
	Embenthic													
	Epipelic													
	Episabulic													
	Epilithic													
	Epixylous													
	Epiphytic								X			X		
Emer-gence	Winter							X						
	Spring	X				X		X	X	X	X	X		
	Summer									X	X	X		
	Autumn													
Feeding	Predator			X	X	X	X		X	X		X		(82) preference for mayflies
	Herbivore													
	Omnivore													
	Scavenger													

Other Water Chemistry, Toxicity, Misc.

O_2 (continued)

(60) 9.2-14.8 mg/l O_2, 95-115% sat

(59) 4-13 mg/l free CO_2
100-230 mg/l alkalinity

(60) 0-10 mg/l free CO_2
100-229 mg/l $CaCO_3$ alkalinity

(28,101) *I. confusa* is a synonym.

Isoperla cotta Ricker

Parameters		3	40	41	61	77	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral				X		
	Alkaliphilous		X				
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal		X				
	Oligothermal		X		X		
	Stenothermal						
	Metathermal						
	Eurythermal		X		X		
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						
	Pond						
	River						
	Stream	X	X		X		
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emer-gence	Winter						
	Spring		X	X			
	Summer	X	X	X			
	Autumn						
Feeding	Predator					X	
	Herbivore						
	Omnivore						
	Scavenger						

Other Water Chemistry, Toxicity, Misc.

(40) 162-234 ppm $CaCO_3$ alkalinity
222-320 ppm $CaCO_3$ hardness
395-600 µmhos conductivity

(61) 14-18 ppm $CaCO_3$ alkalinity

Isoperla coushatta Szczytko & Stewart

Parameters		References																									Notes
		87																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutri-ent	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organ-ics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Tempera-ture	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbid-ity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous	X																									
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River																										
	Stream	X																									
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emer-gence	Winter																										
	Spring	X																									
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Isoperla decepta Frison

Parameters		References			Notes
		12	28	101	
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous		X		
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic		X		
O_2	Euoxyphilous		X		
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal		X		
	Oligothermal				
	Stenothermal				
	Metathermal		X		
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic			X	
General Habitat	Lake				(12) intermittent str
	Pond				
	River				
	Stream		X	X	
	Other	X			
Specific Habitat	Epibenthic				
	Embenthic	X			
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring	X		X	
	Summer				
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore			X	
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Isoperla denningi Jewett

Parameters		100	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		(100) 2400-2500' el
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Isoperla dicala Frison

Parameters		3	41	61	77	96	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral			X			
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal						
	Oligothermal			X			
	Stenothermal						
	Metathermal						
	Eurythermal			X			
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous					X	
	Rheobiontic						
General Habitat	Lake						
	Pond						
	River						
	Stream	X		X		X	
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic					X	
	Epixylous					X	
	Epiphytic					X	
Emer-gence	Winter						
	Spring			X		X	
	Summer	X	X	X		X	
	Autumn						
Feeding	Predator				X		
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.	(61) 14-18 ppm $CaCO_3$ alkalinity						

Isoperla ebria (Hagen)

Parameters		1	85	98	100	102	103	104	109	110	111	112	122	Notes
pH	Acidobiontic													
	Acidophilous													
	Neutral													
	Alkaliphilous													
	Alkalibiontic													
	Indifferent													
Nutri-ent	Eutrophic													
	Mesotrophic													
	Oligotrophic													
	Dystrophic													
Organ-ics	Saprophilic													
	Facultative													
	Saproxenous													
	Saprophobic													
O_2	Euoxyphilous													
	Mesoxyphilous													
	Oligoxyphilous													
Tempera-ture	Euthermal													
	Mesothermal													
	Oligothermal												X	
	Stenothermal													
	Metathermal												X	
	Eurythermal													
Turbid-ity	Eulichtophilous													
	Mesolichtophilous													
	Polylichtophilous													
	Oligolichtophilous													
Current	Limnobiontic													
	Limnophilous													
	Indifferent													
	Rheophilous													
	Rheobiontic													
General Habitat	Lake													(85) 9700-10560' el (98) 8500-11000' el (109) 7000' el (122) 213,152 m el
	Pond													
	River					X				X	X	X		
	Stream	X				X			X	X	X	X	X	
	Other													
Specific Habitat	Epibenthic													
	Embenthic													
	Epipelic													
	Episabulic													
	Epilithic													
	Epixylous													
	Epiphytic													
Emer-gence	Winter													
	Spring				X	X	X	X	X	X	X	X		
	Summer				X	X	X	X	X	X	X	X		
	Autumn													
Feeding	Predator	X					X							
	Herbivore													
	Omnivore													
	Scavenger													
Other Water Chemistry, Toxicity, Misc.	(98,109) *P. ebria* is a synonym.													

Isoperla frisoni Illies

Parameters		3	40	41	77	83	96	Notes
pH	Acidobiontic							
	Acidophilous					X		
	Neutral							
	Alkaliphilous		X					
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous					X		
	Mesoxyphilous					X		
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal		X			X		
	Oligothermal		X					
	Stenothermal							
	Metathermal							
	Eurythermal		X					
Turbid-ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic					X	X	
General Habitat	Lake							(83) 1281-1400' el
	Pond							
	River			X			X	
	Stream	X				X	X	
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic							
	Epixylous							
	Epiphytic							
Emer-gence	Winter							
	Spring		X	X		X	X	
	Summer	X	X	X		X	X	
	Autumn							
Feeding	Predator				X			
	Herbivore							
	Omnivore							
	Scavenger							

Other Water Chemistry, Toxicity, Misc.

(40) 162-234 ppm $CaCO_3$ alkalinity
222-320 ppm $CaCO_3$ hardness
395-600 µmhos conductivity

(83,96) *I. truncata* is a synonym.

Isoperla fulva Claassen

Parameters		26	30	36	37	53	54	55	71	72	85	100	102	108	109	110	111	112	117	118	120	Notes
pH	Acidobiontic																					(120,117,118) TL_m^{96} = 4.5 pH-3.3x10^{-5}m H_2SO_4 TL_m^{96} = 4.6 pH-2.5x10^{-5}m HCl
	Acidophilous																					
	Neutral																				X	
	Alkaliphilous			X											X							
	Alkalibiontic																					
	Indifferent																					
Nutrient	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Organics	Saprophilic																					
	Facultative																					
	Saproxenous																					
	Saprophobic																					
O_2	Euoxyphilous			X	X	X			X						X				X	X		
	Mesoxyphilous			X	X	X													X	X		see below
	Oligoxyphilous																					
Temperature	Euthermal																					(117,118) 18°C, 11 days, 40% surv 12.5-13.5°C, 46 days, 100% surv see below
	Mesothermal		X		X										X				X	X		
	Oligothermal			X	X										X	X						
	Stenothermal																					
	Metathermal		X		X																	
	Eurythermal														X							
Turbidity	Eulichtophilous																					
	Mesolichtophilous				X																	
	Polylichtophilous																					
	Oligolichtophilous																					
Current	Limnobiontic																					
	Limnophilous																					
	Indifferent																					
	Rheophilous							X														
	Rheobiontic		X					X	X													
General Habitat	Lake																					(55,109) temporary str (54) 6900-9200' el (72) low elevation see below
	Pond																					
	River	X			X			X					X		X		X	X				
	Stream		X	X				X	X				X		X	X	X	X				
	Other							X							X							
Specific Habitat	Epibenthic																					
	Embenthic																					
	Epipelic																					
	Episabulic																					
	Epilithic				X				X													
	Epixylous																					
	Epiphytic		X																			
Emergence	Winter																					
	Spring											X	X	X	X	X	X	X				
	Summer											X		X	X	X	X	X				
	Autumn														X							
Feeding	Predator	X							X													
	Herbivore	X																				
	Omnivore		X											X								
	Scavenger																					

Other Water Chemistry, Toxicity, Misc.

O_2 (continued)

(36,53,117,118) 10°C, 1 cc/1 O_2, 24 hrs, 80% mort
10°C, 1 cc/1 O_2, 144 hrs, 100% mort
2.3 mg/1 O_2, 13 days, 50% surv
2.1 mg/1 O_2, 27 days, 10% surv

Temperature (continued)

(117,118) 24-24.5°C, 4 days, 10% surv
24-24.5°C, 7 days, 0% surv

Geographical Distribution (continued)

(85) 9700' el
(109) 6750-9000' el

Isoperla fusca Needham & Claassen

Parameters		References			Notes
		102	104	112	
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream	X		X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring	X		X	
	Summer	X	X	X	
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Isoperla gravitans (Needham & Claassen)

Parameters		References 102	References 104	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream	X		(102) springs
	Other	X		
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring	X	X	
	Summer		X	
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Isoperla lata Frison

Parameters		References		Notes
		3	96	
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic		X	
General Habitat	Lake			
	Pond			
	River			
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter			
	Spring	X	X	
	Summer	X		
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Isoperla longiseta Banks

Parameters		96	102	104	109	110	111	112	Notes
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous				X				
	Alkalibiontic								
	Indifferent								
Nutrient	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous				X				
	Mesoxyphilous								
	Oligoxyphilous								
Temperature	Euthermal								
	Mesothermal				X				
	Oligothermal				X				
	Stenothermal								
	Metathermal								
	Eurythermal				X				
Turbidity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous	X					X		
	Rheobiontic								
General Habitat	Lake								(109) 6750' el
	Pond								
	River	X	X		X	X	X	X	
	Stream		X						
	Other								
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic								
Emergence	Winter								
	Spring				X	X	X	X	
	Summer	X	X	X	X		X	X	
	Autumn								
Feeding	Predator								
	Herbivore								
	Omnivore								
	Scavenger								
Other Water Chemistry, Toxicity, Misc.									

Isoperla marlynia Needham & Claassen

Parameters		3	75	96	104	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous		X			
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic		X			
O_2	Euoxyphilous		X			
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal		X			
	Oligothermal					
	Stenothermal					
	Metathermal		X			
	Eurythermal					
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					
	Pond					
	River	X		X		
	Stream		X			
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring	X		X	X	
	Summer	X		X		
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Isoperla marmorata (Needham & Claassen)

	Parameters	80	100	102	104	79	122	Notes
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous	X				X		
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous							
	Mesoxyphilous							
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal					X		
	Oligothermal					X	X	
	Stenothermal							
	Metathermal						X	
	Eurythermal					X		
Turbid-ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous					X		
	Rheobiontic							
General Habitat	Lake							(80) 1900 m el (122) 198 m el
	Pond							
	River							
	Stream	X		X			X	
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic							
	Epixylous							
	Epiphytic							
Emer-gence	Winter							
	Spring		X	X		X		
	Summer	X	X	X		X		
	Autumn							
Feeding	Predator							
	Herbivore							
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity							

Isoperla maxana Harden & Mickel

Parameters		References																									Notes
		96																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River	X																									
	Stream																										
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter																										
	Spring	X																									
	Summer	X																									
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Isoperla mohri Frison

Parameters		75	87	101	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous	X			
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic	X			
O_2	Euoxyphilous	X			
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal	X			
	Oligothermal				
	Stenothermal				
	Metathermal	X			
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream	X		X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic			X	(101) leaf packs
Emer-gence	Winter				
	Spring		X	X	
	Summer				
	Autumn				
Feeding	Predator			X	
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Isoperla montana (Banks)

Parameters		References			Notes
		83	96	104	
pH	Acidobiontic				
	Acidophilous	X			
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous	X			
	Mesoxyphilous	X			
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal	X			
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic	X			
General Habitat	Lake				(83) 1281-1400' el
	Pond				
	River				
	Stream	X			
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring			X	
	Summer		X	X	
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Isoperla mormona Banks

Parameters		30	54	55	100	102	104	110	111	112	122	Notes
pH	Acidobiontic											
	Acidophilous											
	Neutral											
	Alkaliphilous											
	Alkalibiontic											
	Indifferent											
Nutri-ent	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Organ-ics	Saprophilic											
	Facultative											
	Saproxenous											
	Saprophobic											
O_2	Euoxyphilous											
	Mesoxyphilous											
	Oligoxyphilous											
Tempera-ture	Euthermal											
	Mesothermal	X										
	Oligothermal										X	
	Stenothermal											
	Metathermal										X	
	Eurythermal											
Turbid-ity	Eulichtophilous											
	Mesolichtophilous											
	Polylichtophilous											
	Oligolichtophilous											
Current	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous											
	Rheobiontic	X		X								
General Habitat	Lake											(30) <5900' el
	Pond											(54) <8500' el
	River			X		X		X	X	X		(55) <8000' el
	Stream	X		X		X			X	X	X	(122) 198,152,68 m el
	Other											
Specific Habitat	Epibenthic											
	Embenthic											
	Epipelic											
	Episabulic											
	Epilithic											
	Epixylous											
	Epiphytic											
Emer-gence	Winter											
	Spring				X	X		X	X	X		
	Summer				X	X	X		X	X		
	Autumn											
Feeding	Predator											
	Herbivore											
	Omnivore	X										
	Scavenger											
Other Water Chemistry, Toxicity, Misc.												

Isoperla nana (Walsh)

Parameters		3	28	94	101	104	113	Notes
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous		X					
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous	X						
	Saprophobic		X					
O_2	Euoxyphilous		X					
	Mesoxyphilous							
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal		X					
	Oligothermal							
	Stenothermal							
	Metathermal		X					
	Eurythermal							
Turbid-ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous						X	
	Rheobiontic			X				
General Habitat	Lake							
	Pond							
	River			X				
	Stream	X	X		X		X	(3) temporary str
	Other	X						
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic							
	Epixylous				X			(101) leaf packs
	Epiphytic				X		X	
Emer-gence	Winter							
	Spring	X		X	X	X		
	Summer				X			
	Autumn							
Feeding	Predator							
	Herbivore				X		X	
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.	(28,101,104) *I. minuta* is a synonym.							

Isoperla orata Frison

Parameters		28	41	96	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous	X			
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic	X			
O_2	Euoxyphilous	X			
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal	X	X		
	Oligothermal				
	Stenothermal				
	Metathermal	X	X		
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous			X	
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream	X		X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic			X	
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring		X		
	Summer			X	
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Isoperla patricia Frison

Parameters		30	54	55	92	100	102	108	109	111	112	Notes
pH	Acidobiontic											
	Acidophilous											
	Neutral								X			
	Alkaliphilous				X							
	Alkalibiontic											
	Indifferent											
Nutri-ent	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Organ-ics	Saprophilic											
	Facultative											
	Saproxenous											
	Saprophobic											
O_2	Euoxyphilous				X				X			
	Mesoxyphilous											
	Oligoxyphilous											
Tempera-ture	Euthermal											
	Mesothermal								X			
	Oligothermal				X				X			
	Stenothermal											
	Metathermal				X							
	Eurythermal								X			
Turbid-ity	Eulichtophilous											
	Mesolichtophilous											
	Polylichtophilous											
	Oligolichtophilous											
Current	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous			X								
	Rheobiontic	X		X	X							
General Habitat	Lake											(55) temporary str
	Pond											(54) 6700-9400' el
	River			X			X		X	X	X	
	Stream	X		X	X		X		X	X	X	(55) 8000' el
	Other			X								(109) 5000-8000' el
Specific Habitat	Epibenthic											
	Embenthic											
	Epipelic											
	Episabulic											
	Epilithic											
	Epixylous											
	Epiphytic											
Emer-gence	Winter											
	Spring					X	X	X		X	X	
	Summer					X	X	X	X	X	X	
	Autumn								X			
Feeding	Predator											
	Herbivore											
	Omnivore	X										
	Scavenger											
Other Water Chemistry, Toxicity, Misc.												

Isoperla petersoni Needham & Christenson

Parameters		References					Notes
		38	103	110	111	112	
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutrient	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Temperature	Euthermal						
	Mesothermal						
	Oligothermal						
	Stenothermal						
	Metathermal						
	Eurythermal						
Turbidity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						(38,111,112) springs
	Pond						
	River			X			
	Stream	X	X	X	X	X	
	Other	X			X	X	
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic	X					(38) moss
Emergence	Winter						
	Spring				X	X	
	Summer	X	X	X	X	X	
	Autumn	X			X	X	
Feeding	Predator		X				
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Isoperla phalerata (Smith)

Parameters		References	Notes
		104	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Isoperla pinta Frison

Parameters		54	55	72	100	102	109	110	111	112	Notes
pH	Acidobiontic										
	Acidophilous										
	Neutral										
	Alkaliphilous										
	Alkalibiontic										
	Indifferent										
Nutri-ent	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Organ-ics	Saprophilic										
	Facultative										
	Saproxenous										
	Saprophobic										
O_2	Euoxyphilous										
	Mesoxyphilous										
	Oligoxyphilous										
Tempera-ture	Euthermal										
	Mesothermal			X							
	Oligothermal			X							
	Stenothermal										
	Metathermal										
	Eurythermal			X							
Turbid-ity	Eulichtophilous										
	Mesolichtophilous										
	Polylichtophilous										
	Oligolichtophilous										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous		X								
	Rheobiontic		X								
General Habitat	Lake										(72) low elevations
	Pond										(54) 7200-8700' el
	River		X	X		X	X	X	X	X	(72) low elevations
	Stream			X		X		X	X	X	(109) 6000-7250' el
	Other										
Specific Habitat	Epibenthic										
	Embenthic										
	Epipelic										
	Episabulic										
	Epilithic										
	Epixylous										
	Epiphytic										
Emer-gence	Winter										
	Spring				X	X	X	X	X	X	
	Summer						X		X	X	
	Autumn										
Feeding	Predator										
	Herbivore										
	Omnivore										
	Scavenger										
Other Water Chemistry, Toxicity, Misc.											

Isoperla quinquepunctata (Banks)

Parameters		98	103	104	109	111	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous				X		
	Alkalibiontic						
	Indifferent						
Nutrient	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Temperature	Euthermal						
	Mesothermal				X		
	Oligothermal				X		
	Stenothermal						
	Metathermal						
	Eurythermal				X		
Turbidity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						(98) 6200-9000' el
	Pond						(109) 7000-7250' el
	River				X	X	
	Stream		X				
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emergence	Winter						
	Spring				X	X	
	Summer		X	X	X	X	
	Autumn						
Feeding	Predator		X				
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Isoperla rainiera Jewett

Parameters		102	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring		
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Isoperla richardsoni Frison

Parameters		3	75	96	101	113	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous		X				
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic		X				
O_2	Euoxyphilous		X				
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal		X				
	Oligothermal						
	Stenothermal						
	Metathermal		X				
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						
	Pond						
	River	X			X		
	Stream		X	X			
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous			X			
	Epiphytic						
Emer-gence	Winter						
	Spring	X			X		
	Summer	X		X			
	Autumn						
Feeding	Predator				X	X	
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Isoperla sagittata Szczytko & Stewart

Parameters		References	Notes
		114	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic	X	
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous	X	
	Epiphytic	X	(114) leaf debris
Emer-gence	Winter	X	
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Isoperla signata (Banks)

Parameters		3	28	77	96	103	104	113	Notes
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous		X						
	Alkalibiontic								
	Indifferent								
Nutri-ent	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organ-ics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic		X						
O_2	Euoxyphilous		X						
	Mesoxyphilous								
	Oligoxyphilous								
Tempera-ture	Euthermal								
	Mesothermal		X						
	Oligothermal								
	Stenothermal								
	Metathermal		X						
	Eurythermal								
Turbid-ity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic				X				
General Habitat	Lake								
	Pond								
	River								
	Stream	X	X		X	X			
	Other								
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic								
Emer-gence	Winter								
	Spring	X			X	X	X		
	Summer				X	X	X		
	Autumn								
Feeding	Predator					X		X	
	Herbivore			X					
	Omnivore								
	Scavenger								
Other Water Chemistry, Toxicity, Misc.									

Isoperla similis (Hagen)

Parameters		References 103	References 104	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream	X		
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter			
	Spring	X	X	
	Summer		X	
	Autumn			
Feeding	Predator	X		
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Isoperla slossonae (Banks)

Parameters		3	77	96	104	113	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal						
	Oligothermal						
	Stenothermal						
	Metathermal						
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						
	Pond						
	River			X			
	Stream	X		X			
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous			X			(98) leaf packs
	Epiphytic			X			
Emer-gence	Winter						
	Spring	X		X			
	Summer						
	Autumn						
Feeding	Predator					X	
	Herbivore		X				
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Isoperla sordida Banks

Parameters		100	102	112	122	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal				X	
	Stenothermal					
	Metathermal				X	
	Eurythermal					
Turbidity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					(122) 213,198m el
	Pond					
	River		X	X		
	Stream		X	X	X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emergence	Winter					
	Spring	X		X		
	Summer		X	X		
	Autumn		X	X		
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Isoperla transmarina Newman

Parameters		3	28	40	41	77	83	96	104	113	Notes
pH	Acidobiontic										
	Acidophilous						X				
	Neutral										
	Alkaliphilous		X	X							
	Alkalibiontic										
	Indifferent										
Nutri-ent	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Organ-ics	Saprophilic										
	Facultative										
	Saproxenous										
	Saprophobic		X								
O_2	Euoxyphilous		X				X				
	Mesoxyphilous										
	Oligoxyphilous										
Tempera-ture	Euthermal										
	Mesothermal		X	X			X				
	Oligothermal			X							
	Stenothermal										
	Metathermal		X								
	Eurythermal			X							
Turbid-ity	Eulichtophilous										
	Mesolichtophilous										
	Polylichtophilous										
	Oligolichtophilous										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic						X				
General Habitat	Lake										(83) 1281-1400' el
	Pond										
	River							X			
	Stream	X	X	X			X	X			
	Other										
Specific Habitat	Epibenthic										
	Embenthic										
	Epipelic										
	Episabulic										
	Epilithic										
	Epixylous							X			
	Epiphytic							X		X	(98,113) leaf packs
Emer-gence	Winter										
	Spring	X		X	X		X	X			
	Summer	X		X	X		X	X	X		
	Autumn										
Feeding	Predator					X					
	Herbivore										
	Omnivore										
	Scavenger										

Other Water Chemistry, Toxicity, Misc.

(49) 162-234 ppm $CaCO_3$ alkalinity
222-320 ppm $CaCO_3$ hardness
395-600 μmhos conductivity

(104) *I. ventralis* is a synonym.

Isoperla trictura (Hoppe)

Parameters		100	102	110	112	122	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal					X	
	Oligothermal					X	
	Stenothermal						
	Metathermal					X	
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						(100) 3880-4000' el
	Pond						(122) 68 m el
	River			X	X		
	Stream		X	X	X	X	
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emer-gence	Winter						
	Spring	X	X	X	X		
	Summer		X	X	X		
	Autumn						
Feeding	Predator						
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Kathroperla perdita Banks

Parameters		11	72	100	102	104	110	112	122	Notes
pH	Acidobiontic									
	Acidophilous									
	Neutral									
	Alkaliphilous									
	Alkalibiontic									
	Indifferent									
Nutri-ent	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Organ-ics	Saprophilic									
	Facultative									
	Saproxenous									
	Saprophobic									
O_2	Euoxyphilous									
	Mesoxyphilous									
	Oligoxyphilous									
Tempera-ture	Euthermal									
	Mesothermal	X								
	Oligothermal								X	
	Stenothermal									
	Metathermal	X							X	
	Eurythermal									
Turbid-ity	Eulichtophilous									
	Mesolichtophilous									
	Polylichtophilous									
	Oligolichtophilous									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Lake									
	Pond									(72) all elevations
	River		X		X		X	X		(100) 5000' el
	Stream	X	X		X		X	X	X	(122) 213,198,152 m el
	Other									
Specific Habitat	Epibenthic									
	Embenthic									
	Epipelic									
	Episabulic									
	Epilithic									
	Epixylous									
	Epiphytic									
Emer-gence	Winter									
	Spring			X	X	X	X	X		
	Summer			X	X			X		
	Autumn									
Feeding	Predator									
	Herbivore	X								
	Omnivore									
	Scavenger									
Other Water Chemistry, Toxicity, Misc.										

Kogotus alameda (Needham & Claassen)

Parameters		References		Notes
		100	104	
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream			
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring	X	X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Kogotus modestus (Banks)

Parameters		1	54	55	98	102	104	108	109	111	112	Notes
pH	Acidobiontic											
	Acidophilous											
	Neutral											
	Alkaliphilous											
	Alkalibiontic											
	Indifferent											
Nutri-ent	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Organ-ics	Saprophilic											
	Facultative											
	Saproxenous											
	Saprophobic											
O_2	Euoxyphilous											
	Mesoxyphilous											
	Oligoxyphilous											
Tempera-ture	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
Turbid-ity	Eulichtophilous											
	Mesolichtophilous											
	Polylichtophilous											
	Oligolichtophilous											
Current	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous											
	Rheobiontic			X								
General Habitat	Lake											(54) >8500' el
	Pond											(98) 8000-11600' el
	River			X		X				X	X	(109) 7250' el
	Stream	X				X			X	X	X	
	Other											
Specific Habitat	Epibenthic											
	Embenthic											
	Epipelic											
	Episabulic											
	Epilithic											
	Epixylous											
	Epiphytic											
Emer-gence	Winter											
	Spring					X			X	X	X	
	Summer					X	X	X	X	X	X	
	Autumn											
Feeding	Predator	X										
	Herbivore											
	Omnivore											
	Scavenger											
Other Water Chemistry, Toxicity, Misc.												

Kogotus nonus (Needham & Claassen)

Parameters		15	72	80	100	102	104	110	112	122	Notes
pH	Acidobiontic										
	Acidophilous										
	Neutral										
	Alkaliphilous			X							
	Alkalibiontic										
	Indifferent										
Nutri-ent	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Organ-ics	Saprophilic										
	Facultative										
	Saproxenous										
	Saprophobic										
O_2	Euoxyphilous										
	Mesoxyphilous										
	Oligoxyphilous										
Tempera-ture	Euthermal										
	Mesothermal										
	Oligothermal		X							X	
	Stenothermal										
	Metathermal									X	
	Eurythermal										
Turbid-ity	Eulichtophilous										
	Mesolichtophilous										
	Polylichtophilous										
	Oligolichtophilous										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic										
General Habitat	Lake										(72) low-mid el
	Pond										(80) 1900 m el
	River					X			X		(122) 198 m el
	Stream	X	X	X		X		X	X	X	
	Other										
Specific Habitat	Epibenthic										
	Embenthic										
	Epipelic										
	Episabulic										
	Epilithic										
	Epixylous										
	Epiphytic										
Emer-gence	Winter										
	Spring				X	X			X		
	Summer			X	X	X		X	X		
	Autumn								X		
Feeding	Predator										
	Herbivore										
	Omnivore	X									
	Scavenger										
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity										

Lednia tumana (Ricker)

Parameters		References																									Notes
		112																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River																										
	Stream																										
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter																										
	Spring																										
	Summer	X																									
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Leuctra biloba Claassen

Parameters		83	104	Notes
pH	Acidobiontic			
	Acidophilous	X		
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous	X		
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal	X		
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic	X		
General Habitat	Lake			(83) 1281-1400' el
	Pond			
	River			
	Stream	X		
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring	X	X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Leuctra carolinensis Claassen

Parameters		104	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Leuctra divisa Hitchcock

Parameters		References	Notes
		100	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Leuctra duplicata Claassen

Parameters		41	83	104	107	113	Notes
pH	Acidobiontic						
	Acidophilous		X				
	Neutral						
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous		X				
	Mesoxyphilous		X				
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal	X	X				
	Oligothermal						
	Stenothermal						
	Metathermal	X					
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous					X	
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous					X	
	Rheobiontic						
General Habitat	Lake						(83) 1281-1400' el
	Pond						
	River						(107) temporary str
	Stream		X		X	X	
	Other				X		
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emer-gence	Winter						
	Spring		X				
	Summer	X	X	X			
	Autumn						
Feeding	Predator						
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Leuctra ferruginea (Walker)

Parameters		39	41	74	77	83	96	103	104	107	113	Notes
pH	Acidobiontic											
	Acidophilous					X						
	Neutral											
	Alkaliphilous	X										
	Alkalibiontic											
	Indifferent											
Nutrient	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Organics	Saprophilic											
	Facultative											
	Saproxenous											
	Saprophobic											
O_2	Euoxyphilous					X						
	Mesoxyphilous					X						
	Oligoxyphilous											
Temperature	Euthermal											
	Mesothermal	X	X			X						
	Oligothermal	X										
	Stenothermal											
	Metathermal											
	Eurythermal	X	X									
Turbidity	Eulichtophilous											
	Mesolichtophilous											
	Polylichtophilous											
	Oligolichtophilous											
Current	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous						X					
	Rheobiontic					X	X					
General Habitat	Lake											(83) 1281-1400' el
	Pond											
	River		X				X			X		
	Stream	X	X			X	X	X		X		(98,103) leaf packs
	Other											
Specific Habitat	Epibenthic											
	Embenthic											
	Epipelic											
	Episabulic											
	Epilithic											
	Epixylous											
	Epiphytic						X	X				
Emergence	Winter											
	Spring	X	X								X	
	Summer	X	X	X		X	X	X	X		X	
	Autumn	X				X		X			X	
Feeding	Predator											
	Herbivore							X				
	Omnivore											
	Scavenger				X							

Other Water Chemistry, Toxicity, Misc.

(39) 162-234 ppm $CaCO_3$ alkalinity
222-320 ppm $CaCO_3$ hardness
395-600 μmhos conductivity

(83,96,103,104) *L. decepta* is a synonym.

Leuctra grandis Banks

Parameters		References: 104	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Leuctra maria Hanson

Parameters		References																									Notes
		107																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutri-ent	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organ-ics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Tempera-ture	Euthermal																										
	Mesothermal																										
	Oligothermal	X																									
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbid-ity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River																										
	Stream	X																									
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emer-gence	Winter																										
	Spring																										
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Leuctra sibleyi Claassen

Parameters		41	59	61	83	103	104	107	Notes
pH	Acidobiontic								
	Acidophilous				X				
	Neutral			X					
	Alkaliphilous								
	Alkalibiontic								
	Indifferent								
Nutri-ent	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organ-ics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous		X		X				(59) 10-15 mg/l O_2, >90% saturation
	Mesoxyphilous								
	Oligoxyphilous								
Tempera-ture	Euthermal								
	Mesothermal	X			X				
	Oligothermal			X					
	Stenothermal								
	Metathermal								
	Eurythermal	X		X					
Turbid-ity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic		X		X				
General Habitat	Lake								
	Pond								(83) 1281-1400' el
	River	X						X	
	Stream		X	X	X	X		X	(103) leaf packs
	Other								
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic					X			
Emer-gence	Winter								
	Spring	X		X	X	X	X		
	Summer	X		X	X	X			
	Autumn								
Feeding	Predator								
	Herbivore					X			
	Omnivore								
	Scavenger								
Other Water Chemistry, Toxicity, Misc.									

Leuctra tenella Provancher

Parameters		41	74	83	96	104	107	Notes
pH	Acidobiontic							
	Acidophilous			X				
	Neutral							
	Alkaliphilous							
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous			X				
	Mesoxyphilous							
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal			X				
	Oligothermal	X						
	Stenothermal							
	Metathermal	X						
	Eurythermal							
Turbid-ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic			X				
General Habitat	Lake							(83) 1281-1400' el
	Pond							
	River							
	Stream	X		X	X		X	
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic							
	Epixylous							
	Epiphytic							
Emer-gence	Winter							
	Spring							
	Summer	X	X		X	X		
	Autumn							
Feeding	Predator							
	Herbivore							
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.	(83,96,104) *L. hamula* is a synonym.							

Leuctra tenuis (Pictet)

Parameters		39	41	56	74	83	96	104	107	113	Notes
pH	Acidobiontic										
	Acidophilous					X					
	Neutral										
	Alkaliphilous	X									
	Alkalibiontic										
	Indifferent										
Nutri-ent	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Organ-ics	Saprophilic										
	Facultative										
	Saproxenous										
	Saprophobic										
O_2	Euoxyphilous					X					
	Mesoxyphilous					X					
	Oligoxyphilous										
Tempera-ture	Euthermal										
	Mesothermal		X			X			X		
	Oligothermal	X	X								
	Stenothermal										
	Metathermal	X									
	Eurythermal		X								
Turbid-ity	Eulichtophilous										
	Mesolichtophilous										
	Polylichtophilous										
	Oligolichtophilous										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic					X					
General Habitat	Lake										
	Pond										(83) 1281-1400' el
	River		X						X		
	Stream		X	X		X	X		X		
	Other										
Specific Habitat	Epibenthic										
	Embenthic										
	Epipelic										
	Episabulic										
	Epilithic										
	Epixylous										
	Epiphytic										
Emer-gence	Winter										
	Spring										
	Summer	X	X		X	X	X	X		X	
	Autumn		X							X	
Feeding	Predator										
	Herbivore										
	Omnivore										
	Scavenger										
Other Water Chemistry, Toxicity, Misc.	(39) 162-234 ppm $CaCO_3$ alkalinity 222-320 ppm $CaCO_3$ hardness 395-600 µmhos conductivity										

Leuctra triloba Claassen

Parameters		References: 104	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring		
	Summer		
	Autumn	X	
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Leuctra truncata Claassen

Parameters		41	104	107	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal	X			
	Oligothermal	X		X	
	Stenothermal				
	Metathermal	X			
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream	X		X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring				
	Summer	X	X		
	Autumn	X			
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Leuctra variabilis Hanson

Parameters		References: 113	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		(113) high elevation
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter	X	
	Spring		
	Summer		
	Autumn	X	
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Malenka bifurcata (Claassen)

Parameters		References: 102	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other	X	(102) springs
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter	X	
	Spring	X	
	Summer	X	
	Autumn	X	
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Malenka biloba (Claassen)

Parameters		76	100	104	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-is	Saprophilic				
	Facultative				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous	X			
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream				
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic	X			(76) leaf packs
Emer-gence	Winter				
	Spring		X		
	Summer		X		
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Malenka californica (Claassen)

Parameters		2	64	72	80	100	102	104	109	110	111	112	122	Notes
pH	Acidobiontic													
	Acidophilous													
	Neutral													
	Alkaliphilous				X									
	Alkalibiontic													
	Indifferent													
Nutri- ent	Eutrophic													
	Mesotrophic													
	Oligotrophic													
	Dystrophic													
rgan- ics	Saprophilic													
	Facultative													
	Saproxenous													
O_2	Euoxyphilous													
	Mesoxyphilous													
	Oligoxyphilous													
Tempera- ture	Euthermal													
	Mesothermal													
	Oligothermal			X									X	
	Stenothermal													
	Metathermal												X	
	Eurythermal													
Turbid- ity	Eulichtophilous													
	Mesolichtophilous													
	Polylichtophilous													
	Oligolichtophilous													
Current	Limnobiontic													
	Limnophilous													
	Indifferent													
	Rheophilous													
	Rheobiontic													
General Habitat	Lake													(80) 1900 m el
	Pond													(100) 8000' el
	River													(109) 7500' el
	Stream			X	X		X		X	X	X	X	X	(122) 152,198,213 m el
	Other	X												see below
Specific Habitat	Epibenthic													
	Embenthic													
	Epipelic													
	Episabulic													
	Epilithic													
	Epixylous													
	Epiphytic													
Emer- gence	Winter				X				X	X	X	X		
	Spring						X	X	X		X	X		
	Summer				X				X		X	X		
	Autumn		X		X	X	X	X	X	X	X	X	X	
Feeding	Predator													
	Herbivore													
	Omnivore													
	Scavenger													

Other Water Chemistry, Toxicity, Misc.

General Habitat (continued)

(2) springs

(80) 30-75 ppm m.o. alkalinity

Malenka coloradensis (Banks)

Parameters		54	55	103	104	109	111	112	Notes
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous								
	Alkalibiontic								
	Indifferent								
Nutri-ent	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organ-ics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Mesoxyphilous								
	Oligoxyphilous								
Tempera-ture	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
Turbid-ity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic		X						
General Habitat	Lake								(54) 7600-8800' el
	Pond								(55) <8000' el
	River		X			X		X	(109) 8000' el
	Stream		X	X			X	X	
	Other		X						(55) temporary str
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic			X					(103) leaf packs
Emer-gence	Winter					X	X	X	
	Spring								
	Summer			X	X	X	X	X	
	Autumn					X	X	X	
Feeding	Predator								
	Herbivore			X					
	Omnivore								
	Scavenger			X					
Other Water Chemistry, Toxicity, Misc.									

Malenka cornuta (Claassen)

Parameters		72	102	104	110	122	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal						
	Oligothermal	X				X	
	Stenothermal						
	Metathermal					X	
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						(72) to mid elevations (110) low-mid " (122) 213,198,152 m el
	Pond						
	River						
	Stream	X	X		X	X	
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emer-gence	Winter						
	Spring		X	X	X	X	
	Summer		X	X	X	X	
	Autumn						
Feeding	Predator						
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Malenka depressa (Banks)

Parameters		References			Notes
		100	102	104	
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream	X	X		
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter	X			
	Spring	X	X	X	
	Summer	X	X		
	Autumn	X		X	
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Malenka flexura (Claassen)

Parameters		References																									Notes
		1	102	104	111	112																					
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutri-ent	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organ-ics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Tempera-ture	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbid-ity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River																										
	Stream	X	X		X	X																					
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emer-gence	Winter																										
	Spring		X		X	X																					
	Summer		X		X	X																					
	Autumn				X	X																					
Feeding	Predator																										
	Herbivore	X																									
	Omnivore																										
	Scavenger	X																									
Other Water Chemistry, Toxicity, Misc.																											

Malenka marionae (Hitchcock)

Parameters		References: 100	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other	X	(100) spring
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Malenka perplexa (Frison)

Parameters		References	Notes
		102	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other	X	(102) spring
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring	X	
	Summer	X	
	Autumn	X	
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Malenka tina (Ricker)

Parameters		References		Notes
		102	112	
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring	X	X	
	Summer	X	X	
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Malirekus hastatus (Banks)

Parameters		References 103	104	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous	X		
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal	X		
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous	X		
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream	X		
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic	X		
	Epixylous			
	Epiphytic			
Emergence	Winter			
	Spring	X	X	
	Summer	X	X	
	Autumn			
Feeding	Predator	X		
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Megaleuctra complicata Claassen

Parameters		References	Notes
		102	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Megaleuctra kincaidi Frison

Parameters		References 102	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		(102) 5000' el
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Megaleuctra stigmata (Banks)

Parameters		104	112	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River		X	
	Stream		X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter			
	Spring	X	X	
	Summer	X	X	
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Megarcys irregularis (Banks)

Parameters		References 102	104	110	Not
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous			X	
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River			X	
	Stream	X			
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring	X		X	
	Summer	X	X	X	
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.	(104) *P. signata* is a synonym. Also see *M. subtruncata*.				

Megarcys signata (Hagen)

Parameters		1	4	10	54	55	71	72	85	98	102	103	109	111	112	117	118	Notes
pH	Acidobiontic																	
	Acidophilous																	
	Neutral												X					
	Alkaliphilous			X														
	Alkalibiontic																	
	Indifferent																	
Nutrient	Eutrophic																	
	Mesotrophic																	
	Oligotrophic																	
	Dystrophic																	
Organics	Saprophilic																	
	Facultative																	
	Saproxenous																	
	Saprophobic																	
O_2	Euoxyphilous												X					
	Mesoxyphilous			X														
	Oligoxyphilous																	
Temperature	Euthermal																	(117,118) emerged 1 mo early with 5 days at 18°C. 15°C, 14 days-60% surv see below
	Mesothermal												X					
	Oligothermal		X	X				X					X			X	X	
	Stenothermal																	
	Metathermal		X	X														
	Eurythermal												X					
Turbidity	Eulichtophilous																	
	Mesolichtophilous																	
	Polylichtophilous																	
	Oligolichtophilous																	
Current	Limnobiontic																	
	Limnophilous																	
	Indifferent																	
	Rheophilous																	
	Rheobiontic					X	X					X						
General Habitat	Lake																	(10) 1605-2280 m el (54) 8700-10300' el (55) >8000' el (72) low elevations see below
	Pond																	
	River					X	X	X					X	X	X			
	Stream	X	X	X		X	X						X	X	X			
	Other					X												
Specific Habitat	Epibenthic																	
	Embenthic																	
	Epipelic																	
	Episabulic																	
	Epilithic			X			X											
	Epixylous																	
	Epiphytic																	
Emergence	Winter													X				
	Spring			X									X	X	X			
	Summer		X	X								X	X		X			
	Autumn											X						
Feeding	Predator	X		X	X		X					X						
	Herbivore																	
	Omnivore																	
	Scavenger																	

Other Water Chemistry, Toxicity, Misc.

Temperature (continued)

(117,118) 11.5-13°C, 31 days-100% surv
18-20°C, 3 days-70% surv
18-20°C, 7 & 10 days-30% surv
18-20°C, 14 days-0% surv

General Habitat (continued)

(85) 7800-10560' el
(98) 8500-11000' el
(109) 5250-9000' el
(55) temporary str

(10) 109-189 mg/l Ca bicarb.
0.2-2.4 mg/l Ca carb.
100-340 mg/l hardness

Megarcys subtruncata Hanson

Parameters		10	15	72	102	104	110	112	Notes
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous								
	Alkalibiontic								
	Indifferent								
Nutri-ent	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organ-ics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous								
	Mesoxyphilous								
	Oligoxyphilous								
Tempera-ture	Euthermal								
	Mesothermal								
	Oligothermal			X			X		
	Stenothermal								
	Metathermal								
	Eurythermal								
Turbid-ity	Eulichtophilous						X		
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
General Habitat	Lake								(72) all elevations
	Pond								
	River				X		X	X	
	Stream			X	X		X	X	
	Other								
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic								
Emer-gence	Winter								
	Spring				X		X	X	
	Summer				X	X	X	X	
	Autumn								
Feeding	Predator	X							
	Herbivore								
	Omnivore		X						
	Scavenger								
Other Water Chemistry, Toxicity, Misc.	Also see *M. irregularis*.								

Megarcys watertoni (Ricker)

Parameters		References 102	112	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic		X	
General Habitat	Lake			
	Pond			
	River			
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring		X	
	Summer	X	X	
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Megarcys yosemite (Needham & Claassen)

Parameters		100	102	104	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				(100) 11000' el
	Pond				
	River				
	Stream		X		
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring				
	Summer		X		
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Mesocapnia oenone (Neave)

Parameters		References: 72	102	110	112	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal	X				
	Stenothermal					
	Metathermal					
	Eurythermal					
Turbidity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					(72) low elevation
	Pond					
	River	X	X		X	
	Stream		X	X	X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emergence	Winter				X	
	Spring		X		X	
	Summer					
	Autumn			X	X	
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Mesocapnia porrecta (Jewett)

Parameters		100	102	122	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal			X	
	Stenothermal				
	Metathermal			X	
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				(122) 198,152 m el
	Pond				
	River		X		
	Stream		X	X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter	X	X		
	Spring	X			
	Summer				
	Autumn		X		
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Mesocapnia projecta (Frison)

Parameters		References 102	110	111	112	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					
	Pond					
	River	X	X	X	X	
	Stream	X	X	X	X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter	X		X	X	
	Spring	X		X	X	
	Summer					
	Autumn	X	X		X	
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Moselia infuscata (Claassen)

Parameters		72	100	102	104	110	122	Notes
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous							
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous							
	Mesoxyphilous							
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal							
	Oligothermal						X	
	Stenothermal							
	Metathermal						X	
	Eurythermal							
Turbid-ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic							
General Habitat	Lake							(72) all elevations (100) 4000-9000' el (110) to high el (122) 213 m el
	Pond							
	River							
	Stream	X		X		X	X	
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic							
	Epixylous							
	Epiphytic							
Emer-gence	Winter							
	Spring			X	X	X		
	Summer	X		X	X	X		
	Autumn							
Feeding	Predator							
	Herbivore							
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.								

Neaviperla forcipata (Neave)

Parameters		72	102	110	112	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal	X				
	Stenothermal					
	Metathermal					
	Eurythermal					
Turbidity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					(72) low elevation
	Pond					
	River	X	X		X	
	Stream		X	X	X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emergence	Winter					
	Spring					
	Summer		X		X	
	Autumn		X	X	X	
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Nemoura trispinosa Claassen

Parameters		39	83	96	104	105	113	Notes
pH	Acidobiontic							
	Acidophilous		X					
	Neutral							
	Alkaliphilous	X						
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous		X					
	Mesoxyphilous							
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal		X					
	Oligothermal	X						
	Stenothermal							
	Metathermal	X						
	Eurythermal							
Turbid-ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic		X					
General Habitat	Lake							
	Pond							(83) 1281-1400' el
	River							(113) high elevation
	Stream	X	X	X		X	X	
	Other			X			X	(96,113) spring
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic			X				
	Epixylous							
	Epiphytic			X				
Emer-gence	Winter							
	Spring	X						
	Summer	X			X			
	Autumn							
Feeding	Predator							
	Herbivore							
	Omnivore							
	Scavenger							

Other Water Chemistry, Toxicity, Misc.

(39) 162-234 ppm $CaCO_3$ alkalinity
222-320 ppm $CaCO_3$ hardness
395-600 µmhos conductivity

Neoperla clymene (Newman)

Parameters		46	75	81	88	89	94	96	101	103	104	113	114	115	125	Notes
pH	Acidobiontic															
	Acidophilous															
	Neutral															
	Alkaliphilous		X		X										X	
	Alkalibiontic															
	Indifferent															
Nutri-ent	Eutrophic															
	Mesotrophic															
	Oligotrophic															
	Dystrophic															
Organ-ics	Saprophilic															
	Facultative															
	Saproxenous		X			X										
	Saprophobic														X	
O_2	Euoxyphilous		X			X									X	(88) 2.5 ppm O_2 mini-mum surv. for 12 hrs at 22°C
	Mesoxyphilous				X											
	Oligoxyphilous															
Tempera-ture	Euthermal															
	Mesothermal		X		X									X		
	Oligothermal														X	
	Stenothermal															
	Metathermal															
	Eurythermal		X													
Turbid-ity	Eulichtophilous														X	
	Mesolichtophilous													X		
	Polylichtophilous															
	Oligolichtophilous															
Current	Limnobiontic															
	Limnophilous															
	Indifferent															
	Rheophilous									X						
	Rheobiontic						X	X	X						X	
General Habitat	Lake															(46,115) intermittent, temporary str.
	Pond															
	River						X	X							X	
	Stream	X	X		X				X	X				X		
	Other	X												X		
Specific Habitat	Epibenthic															
	Embenthic															
	Epipelic															
	Episabulic															
	Epilithic							X							X	
	Epixylous															
	Epiphytic								X							
Emer-gence	Winter															
	Spring						X						X		X	
	Summer						X	X	X	X			X		X	
	Autumn												X			
Feeding	Predator		X	X					X	X			X		X	
	Herbivore															
	Omnivore															
	Scavenger															

Other Water Chemistry, Toxicity, Misc.

(88) 37-40 ppm alkalinity
90-98 ppm hardness

(125) 512 ppm t. hardness
372 ppm Ca hardness
108 ppm alkalinity
517 ppm Cl

Oemopteryx contorta (Needham & Claassen)

Parameters		References: 104	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Oemopteryx fosketti (Ricker)

Parameters		109	111	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous	X		
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous	X		
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal	X		
	Oligothermal	X		
	Stenothermal			
	Metathermal			
	Eurythermal	X		
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			(109) 5250-6000' el
	Pond			
	River	X	X	
	Stream		X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter	X		
	Spring	X	X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.	(111) *B. selona* is a synonym.			

Oemopteryx glacialis (Newport)

Parameters		References: 96	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic	X	
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Oroperla barbara Needham

Parameters		79	100	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous	X		
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal	X		
	Oligothermal	X		
	Stenothermal			
	Metathermal			
	Eurythermal	X		
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			(79) 1100,1670 m el
	Pond			
	River			
	Stream	X		
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter			
	Spring	X		
	Summer	X		
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Osobenus yakimae (Hoppe)

Parameters		References																									Notes
		100																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River																										
	Stream																										
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter																										
	Spring	X																									
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Ostrocerca albidipennis (Walker)

Parameters		References 83	104	105	Notes
pH	Acidobiontic				
	Acidophilous	X			
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous	X			
	Mesoxyphilous	X			
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal	X			
	Oligothermal				
	Stenothermal				
	Metathermal	X			
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic	X			
General Habitat	Lake				(83) 1281-1400' el
	Pond				
	River				(105) temporary str
	Stream	X		X	
	Other			X	
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring	X	X		
	Summer	X			
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Ostrocerca dimicki (Frison)

Parameters		72	102	110	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous			X	
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream	X	X	X	(102) low elevation
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter		X		
	Spring		X	X	
	Summer				
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Ostrocerca foersteri (Ricker)

Parameters		References			Notes
		102	110	122	
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal			X	
	Stenothermal				
	Metathermal			X	
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				(102) low elevation (122) 213,152 m el
	Pond				
	River				
	Stream	X	X	X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring	X	X		
	Summer				
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Ostrocerca prolongata (Claassen)

Parameters		References	Notes
		104	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Ostrocerca truncata (Claassen)

Parameters		References 104	105	113	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbidity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				(105) temporary str (113) temporary str, seep
	Pond				
	River				
	Stream		X	X	
	Other		X	X	
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emergence	Winter				
	Spring	X			
	Summer				
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Paracapnia angulata Hanson

Parameters		References 42	61	106	109	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral		X			
	Alkaliphilous	X				
	Alkalibiontic					
	Indifferent					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal	X	X			
	Stenothermal					
	Metathermal	X				
	Eurythermal		X			
Turbidity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					(109) 6750-7500' el
	Pond					
	River					
	Stream	X	X	X	X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emergence	Winter		X			
	Spring	X	X		X	
	Summer					
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					

Other Water Chemistry, Toxicity, Misc.

(42) 164-208 ppm $CaCO_3$ alkalinity
236-278 ppm $CaCO_3$ hardness
418-480 µmhos conductivity
(61) 14-18 ppm $CaCO_3$ alkalinity

Paracapnia opis (Newman)

Parameters		References 42	96	106	113	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal	X		X		
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake		X			(96) shore
	Pond					
	River			X		
	Stream		X	X		
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring		X		X	
	Summer				X	
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.	(96) *P. curvata* is a synonym.					

Paragnetina fumosa (Banks)

Parameters		References																									Notes
		114																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River																										
	Stream	X																									
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter																										
	Spring	X																									
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Paragnetina immarginata (Say)

Parameters		41	87	89	103	104	113	Notes
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous							
	Alkalibiontic							
	Indifferent							
Nutrient	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organics	Saprophilic							
	Facultative							
	Saproxenous			X				
	Saprophobic							
O_2	Euoxyphilous			X				
	Mesoxyphilous							
	Oligoxyphilous							
Temperature	Euthermal							
	Mesothermal	X						
	Oligothermal	X	X					
	Stenothermal							
	Metathermal	X						
	Eurythermal							
Turbidity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic				X			
General Habitat	Lake							
	Pond							
	River	X						
	Stream		X		X			
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic				X			
	Epixylous							
	Epiphytic							
Emergence	Winter							
	Spring				X	X		
	Summer	X			X	X		
	Autumn	X			X	X		
Feeding	Predator				X		X	(103) diatoms
	Herbivore				X			
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.								

Paragnetina kansensis (Banks)

Parameters		References 104	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring		
	Summer	X	
	Autumn	X	
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Paragnetina media (Walker)

Parameters		28	40	41	47	48	61	68	73	77	89	96	101	103	104	113	123	Notes
pH	Acidobiontic																	
	Acidophilous																	
	Neutral						X											
	Alkaliphilous	X	X					X									X	
	Alkalibiontic																	
	Indifferent																	
Nutrient	Eutrophic																	
	Mesotrophic																	
	Oligotrophic																	
	Dystrophic																	
Organics	Saprophilic																	
	Facultative																	
	Saproxenous										X							
	Saprophobic	X																
O_2	Euoxyphilous	X						X			X						X	(47) O_2 consumption varies diurnally see below
	Mesoxyphilous																	
	Oligoxyphilous																	
Temperature	Euthermal																	
	Mesothermal	X	X	X													X	(68) $TL_m^{96} = 30.5°C$
	Oligothermal		X	X	X	X	X	X									X	(123) T° tolerance greater summer,autumn
	Stenothermal																	
	Metathermal	X																
	Eurythermal		X	X			X										X	see below
Turbidity	Eulichtophilous												X					
	Mesolichtophilous												X					
	Polylichtophilous																	
	Oligolichtophilous																	
Current	Limnobiontic																	
	Limnophilous																	
	Indifferent																	
	Rheophilous				X	X								X				
	Rheobiontic						X										X	
General Habitat	Lake															X		
	Pond															X		
	River			X					X			X	X					
	Stream	X	X				X		X			X	X	X		X		
	Other																	
Specific Habitat	Epibenthic																	
	Embenthic																	
	Epipelic																	
	Episabulic																	
	Epilithic													X				
	Epixylous																	
	Epiphytic																	
Emergence	Winter																	
	Spring		X				X					X		X	X			
	Summer			X			X					X	X	X	X			
	Autumn																	
Feeding	Predator									X			X			X		
	Herbivore																	
	Omnivore																	
	Scavenger																	

Other Water Chemistry, Toxicity, Misc.

O_2 (continued)

(48) O_2 consumption reduced with gill removal
O_2 consumption per unit wt. decr. as wt. incr.

Temperature (continued)

(123) Lethal T° incr. by .75°C per 10°C rise in acclimation T°

(40) 162-234 ppm $CaCO_3$ alkalinity
222-230 ppm $CaCO_3$ hardness
395-600 µmhos conductivity

(61) 14-18 ppm $CaCO_3$ alkalinity

(68) 40 ppm $CaCO_3$ t. alkalinity
35-40 ppm $CaCO_3$ t. hardness

Paraleuctra forcipata (Frison)

Parameters		100	102	108	112	122	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal						
	Oligothermal					X	
	Stenothermal						
	Metathermal					X	
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						(122) 213,198 m el
	Pond						
	River						
	Stream		X		X	X	
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emer-gence	Winter						
	Spring	X	X	X	X		
	Summer			X	X		
	Autumn						
Feeding	Predator						
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Paraleuctra jewetti Nebeker & Gaufin

Parameters		References 66	112	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal		X	
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic		X	
General Habitat	Lake			
	Pond			
	River			
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter			
	Spring		X	
	Summer		X	
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Paraleuctra occidentalis (Banks)

Parameters		23	64	66	72	80	98	100	102	104	108	109	110	111	112	122	Notes
pH	Acidobiontic																
	Acidophilous																
	Neutral											X					
	Alkaliphilous					X											
	Alkalibiontic																
	Indifferent																
Nutri-ent	Eutrophic																
	Mesotrophic																
	Oligotrophic											X					
	Dystrophic																
Organ-ics	Saprophilic																
	Facultative																
	Saproxenous																
	Saprophobic																
O_2	Euoxyphilous											X					
	Mesoxyphilous																
	Oligoxyphilous																
Tempera-ture	Euthermal																
	Mesothermal																
	Oligothermal											X				X	
	Stenothermal																
	Metathermal											X				X	
	Eurythermal																
Turbid-ity	Eulichtophilous																
	Mesolichtophilous																
	Polylichtophilous																
	Oligolichtophilous																
Current	Limnobiontic																
	Limnophilous																
	Indifferent																
	Rheophilous																
	Rheobiontic																
General Habitat	Lake																(72) all elevations
	Pond																(80) 1900 m el
	River								X				X	X	X		(98) 8000-10600' el
	Stream	X		X	X	X							X	X	X	X	(109) 6750' el
	Other																see below
Specific Habitat	Epibenthic																
	Embenthic																
	Epipelic																
	Episabulic																
	Epilithic																
	Epixylous																
	Epiphytic																
Emer-gence	Winter							X	X	X		X		X	X		
	Spring	X	X			X		X	X	X	X	X	X	X	X		
	Summer		X							X		X	X		X		
	Autumn																
Feeding	Predator																
	Herbivore																
	Omnivore																
	Scavenger																

Other Water Chemistry, Toxicity, Misc.

General Habitat (continued)

(110) to high elevation
(122) 213,198,152 m el

(72,104,110) *L. bradleyi* is a synonym.

(80) 30-75 ppm m.o. alkalinity

Paraleuctra purcellana (Neave)

Parameters		References		Notes
		102	112	
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent.			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring		X	
	Summer	X	X	
	Autumn		X	
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Paraleuctra rickeri Nebeker & Gaufin

Parameters		66	112	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal		X	
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic		X	
General Habitat	Lake			
	Pond			
	River			
	Stream		X	
	Other	X	X	(66,112) springs, seeps
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter			
	Spring		X	
	Summer		X	
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Paraleuctra sara (Claassen)

Parameters		23	54	55	80	83	90	100	102	107	109	111	112	122	Notes
pH	Acidobiontic														
	Acidophilous					X									
	Neutral						X				X				
	Alkaliphilous				X										
	Alkalibiontic														
	Indifferent														
Nutrient	Eutrophic														
	Mesotrophic														
	Oligotrophic														
	Dystrophic														
Organics	Saprophilic														
	Facultative														
	Saproxenous														
	Saprophobic														
O_2	Euoxyphilous					X					X				
	Mesoxyphilous														
	Oligoxyphilous														
Temperature	Euthermal														
	Mesothermal					X	X				X				
	Oligothermal										X			X	
	Stenothermal														
	Metathermal													X	
	Eurythermal										X				
Turbidity	Eulichtophilous														
	Mesolichtophilous														
	Polylichtophilous														
	Oligolichtophilous														
Current	Limnobiontic														
	Limnophilous														
	Indifferent														
	Rheophilous			X											
	Rheobiontic					X									
General Habitat	Lake														
	Pond														(54) 7000-9200' el
	River			X					X	X	X	X	X		(80) 1900 m el
	Stream	X		X	X	X			X	X	X	X	X	X	(83) 1281-1400' el
	Other										X				(109) 6750-9250' el see below
Specific Habitat	Epibenthic														
	Embenthic														
	Epipelic														
	Episabulic														
	Epilithic														
	Epixylous														
	Epiphytic														
Emergence	Winter						X				X				
	Spring	X			X		X	X	X		X	X	X		
	Summer				X			X	X		X	X	X		
	Autumn														
Feeding	Predator														
	Herbivore														
	Omnivore														
	Scavenger														

Other Water Chemistry, Toxicity, Misc.

General Habitat (continued)

(122) 213,198,152,68 m el

(109) temporary str

(80) 30-75 ppm m.o. alkalinity
(90) 8 ppm m.o. alkalinity
0 ppm p. alkalinity
3.5 ppm CO_2

Paraleuctra vershina Gaufin & Ricker

Parameters		References		Notes
		85	108	
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			(85) 7870' el
	Pond			
	River			
	Stream			
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter			
	Spring	X		
	Summer	X		
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Paranemoura perfecta (Walker)

Parameters		41	83	105	113	Notes
pH	Acidobiontic					
	Acidophilous		X			
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous		X			
	Mesoxyphilous		X			
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal	X	X			
	Oligothermal					
	Stenothermal					
	Metathermal	X				
	Eurythermal					
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic		X			
General Habitat	Lake					(83) 1281-1400' el
	Pond					
	River					(113) temporary str
	Stream		X	X	X	
	Other				X	
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring	X				
	Summer					
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Paraperla frontalis (Banks)

Parameters		References															Notes
		54	55	63	72	84	98	100	102	103	104	108	109	110	111	112	
pH	Acidobiontic																
	Acidophilous																
	Neutral												X				
	Alkaliphilous																
	Alkalibiontic																
	Indifferent																
Nutrient	Eutrophic																
	Mesotrophic																
	Oligotrophic																
	Dystrophic																
Organics	Saprophilic																
	Facultative																
	Saproxenous																
	Saprophobic																
O_2	Euoxyphilous												X				
	Mesoxyphilous																
	Oligoxyphilous																
Temperature	Euthermal																
	Mesothermal				X								X				
	Oligothermal		X		X								X				
	Stenothermal																
	Metathermal				X												
	Eurythermal												X				
Turbidity	Eulichtophilous																
	Mesolichtophilous																
	Polylichtophilous																
	Oligolichtophilous																
Current	Limnobiontic																
	Limnophilous																
	Indifferent																
	Rheophilous																
	Rheobiontic		X	X						X							
General Habitat	Lake																(54) 7200-9600' el
	Pond																(72) low-mid el
	River		X		X	X			X				X	X	X	X	(98) 9900-10200' el
	Stream			X					X				X	X	X	X	(100) 5000-8500' el
	Other																(109) 6500-8000' el
Specific Habitat	Epibenthic																
	Embenthic					X											
	Epipelic																
	Episabulic																
	Epilithic																
	Epixylous																
	Epiphytic																
Emergence	Winter																
	Spring							X	X	X	X	X	X	X	X	X	
	Summer							X	X	X	X	X	X	X	X	X	
	Autumn																
Feeding	Predator									X							
	Herbivore																
	Omnivore																
	Scavenger																
Other Water Chemistry, Toxicity, Misc.																	

Paraperla wilsoni Ricker

Parameters		References	Notes
		112	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		(112) higher el than *P. frontalis*
	Pond		
	River	X	
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Peltoperla arcuata Needham

Parameters		References 24	103	104	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbidity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous	X	X		
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream	X	X		
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic	X	X		(24) debris (103) leaf packs
Emergence	Winter				
	Spring				
	Summer		X	X	
	Autumn				
Feeding	Predator				
	Herbivore	X	X		
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Peltoperla maria Needham & Smith

Parameters		18	19	24	90	91	95	104	113	Notes
pH	Acidobiontic									
	Acidophilous									
	Neutral				X		X			
	Alkaliphilous		X							
	Alkalibiontic									
	Indifferent									
Nutrient	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Organics	Saprophilic									
	Facultative									
	Saproxenous									
	Saprophobic									
O_2	Euoxyphilous		X				X			
	Mesoxyphilous					X	X			
	Oligoxyphilous									
Temperature	Euthermal									
	Mesothermal				X		X			
	Oligothermal		X	X			X			
	Stenothermal									
	Metathermal		X	X	X					
	Eurythermal						X			
Turbidity	Eulichtophilous									
	Mesolichtophilous					X				
	Polylichtophilous									
	Oligolichtophilous									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous			X						
	Rheobiontic									
General Habitat	Lake									(95) 700-1014 m el
	Pond									
	River									
	Stream		X			X			X	
	Other									
Specific Habitat	Epibenthic									
	Embenthic									
	Epipelic									
	Episabulic									
	Epilithic									
	Epixylous									(24,113,91) leaf packs, debris
	Epiphytic			X		X			X	
Emergence	Winter									
	Spring			X				X		
	Summer									
	Autumn									
Feeding	Predator									
	Herbivore	X				X				
	Omnivore									
	Scavenger	X							X	

Other Water Chemistry, Toxicity, Misc.

(19) 170 ppm bicarb.
(90) 8 ppm alkalinity
0 ppm p. alkalinity
3.5 ppm CO_2
(95) 10 ppm alkalinity
8.7-16.7 μmhos conductivity
4.05-9.84 mg/l t. phosphates

(104) *P. cornelia* is a synonym.

Perlesta frisoni Banks

Parameters		References 89	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous	X	
	Saprophobic		
O_2	Euoxyphilous	X	
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Perlesta placida (Hagen)

Parameters		References																Notes
		17	28	31	32	75	77	87	89	94	96	101	103	104	113	114	115	
pH	Acidobiontic																	
	Acidophilous																	
	Neutral																	
	Alkaliphilous		X			X												
	Alkalibiontic																	
	Indifferent																	
Nutri-ent	Eutrophic																	
	Mesotrophic																	
	Oligotrophic																	
	Dystrophic																	
Organ-ics	Saprophilic																	
	Facultative																	
	Saproxenous					X			X									
	Saprophobic		X		X													
O_2	Euoxyphilous	X	X	X		X			X									
	Mesoxyphilous			X	X													
	Oligoxyphilous																	
Tempera-ture	Euthermal																	
	Mesothermal	X	X	X		X											X	
	Oligothermal	X																
	Stenothermal																	
	Metathermal	X	X															
	Eurythermal			X		X												
Turbid-ity	Eulichtophilous											X						
	Mesolichtophilous											X					X	
	Polylichtophilous															X		
	Oligolichtophilous																	
Current	Limnobiontic																	
	Limnophilous																	
	Indifferent																	
	Rheophilous	X																
	Rheobiontic	X								X		X	X					
General Habitat	Lake																	(94,96,113,114,115) intermittent str
	Pond																	
	River	X														X		
	Stream	X	X	X	X	X				X	X	X			X	X	X	
	Other									X	X				X	X	X	
Specific Habitat	Epibenthic																	(87,114) debris, leaf packs
	Embenthic																	
	Epipelic																	
	Episabulic																	
	Epilithic	X						X				X				X		
	Epixylous																	
	Epiphytic							X				X				X		
Emer-gence	Winter																	
	Spring							X		X	X	X	X	X		X		
	Summer									X	X	X	X	X	X	X		
	Autumn														X			
Feeding	Predator	X				X	X	X				X	X		X			
	Herbivore																	
	Omnivore																	
	Scavenger																	
Other Water Chemistry, Toxicity, Misc.	(17) 230 ppm $CaCO_3$ alkalinity																	

Perlinella drymo (Newman)

Parameters		References: 30	89	96	101	103	104	114	115	Notes
pH	Acidobiontic									
	Acidophilous									
	Neutral									
	Alkaliphilous									
	Alkalibiontic									
	Indifferent									
Nutri-ent	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Organ-ics	Saprophilic									
	Facultative									
	Saproxenous		X							
	Saprophobic									
O_2	Euoxyphilous		X							
	Mesoxyphilous									
	Oligoxyphilous									
Tempera-ture	Euthermal									
	Mesothermal								X	
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
Turbid-ity	Eulichtophilous									
	Mesolichtophilous								X	
	Polylichtophilous									
	Oligolichtophilous									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous	X				X				
	Rheobiontic				X					
General Habitat	Lake									
	Pond			X		X				(115) intermittent str
	River				X					
	Stream			X		X			X	
	Other								X	
Specific Habitat	Epibenthic									
	Embenthic									
	Epipelic									
	Episabulic									
	Epilithic				X			X		
	Epixylous									
	Epiphytic							X		(114) debris
Emer-gence	Winter									
	Spring			X	X	X	X	X		
	Summer			X		X	X			
	Autumn									
Feeding	Predator				X			X		
	Herbivore									
	Omnivore									
	Scavenger									
Other Water Chemistry, Toxicity, Misc.										

Perlinodes aureus (Smith)

Parameters		References																									Notes
		36	70	79	80	100	102	104	112	117	118																
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous	X			X																						
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										(36,117,118) TL_m^{96} = 3.3 mg/l O_2- see below
	Mesoxyphilous									X	X																
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal	X																									
	Oligothermal		X																								
	Stenothermal																										
	Metathermal		X																								
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										(79) 1100-1950 m el (80) 1900 m el (100) 3500,6500' el
	Pond																										
	River						X		X																		
	Stream	X	X		X		X		X																		
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter																										
	Spring		X		X		X	X	X																		
	Summer		X			X																					
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										

Other Water Chemistry, Toxicity, Misc.

O_2 (continued)

29% sat.

4.8 mg/l O_2, 12 days-30% surv.

(80) 30-75 ppm m.o. alkalinity

(104) *P. vagans* is a synonym.

Perlomyia collaris Banks

Parameters		References 72	100	102	104	110	112	122	Notes
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous								
	Alkalibiontic								
	Indifferent								
Nutri-ent	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organ-ics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous								
	Mesoxyphilous								
	Oligoxyphilous								
Tempera-ture	Euthermal								
	Mesothermal								
	Oligothermal	X						X	
	Stenothermal								
	Metathermal							X	
	Eurythermal								
Turbid-ity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
General Habitat	Lake								(72) low elevation (122) 152 m el
	Pond								
	River	X		X		X	X		
	Stream			X		X	X	X	
	Other								
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic								
Emer-gence	Winter			X			X		
	Spring		X	X		X	X		
	Summer		X			X			
	Autumn								
Feeding	Predator								
	Herbivore								
	Omnivore								
	Scavenger								
Other Water Chemistry, Toxicity, Misc.	(72) *P. solitaria* is a synonym.								

Perlomyia utahensis Needham & Claassen

Parameters		2	64	72	102	104	110	111	112	122	Notes
pH	Acidobiontic										
	Acidophilous										
	Neutral										
	Alkaliphilous										
	Alkalibiontic										
	Indifferent										
Nutrient	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Organics	Saprophilic										
	Facultative										
	Saproxenous										
	Saprophobic										
O_2	Euoxyphilous										
	Mesoxyphilous										
	Oligoxyphilous										
Temperature	Euthermal										
	Mesothermal										
	Oligothermal		X	X				X		X	
	Stenothermal										
	Metathermal									X	
	Eurythermal										
Turbidity	Eulichtophilous										
	Mesolichtophilous										
	Polylichtophilous										
	Oligolichtophilous										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic										
General Habitat	Lake										(72) low elevation
	Pond										(122) 152 m el
	River			X			X	X	X		
	Stream						X	X	X	X	(2,64,111,112) springs
	Other	X	X					X	X		
Specific Habitat	Epibenthic										
	Embenthic										
	Epipelic										
	Episabulic										
	Epilithic										
	Epixylous										
	Epiphytic										
Emergence	Winter										
	Spring		X		X		X	X	X		
	Summer								X		
	Autumn										
Feeding	Predator										
	Herbivore										
	Omnivore										
	Scavenger										
Other Water Chemistry, Toxicity, Misc.											

Phasganophora capitata (Pictet)

Parameters		15	19	24	28	40	49	50	75	77	88	89	96	101	103	104	113	Notes
pH	Acidobiontic																	
	Acidophilous																	
	Neutral							X										
	Alkaliphilous		X		X	X			X		X							
	Alkalibiontic																	
	Indifferent																	
Nutrient	Eutrophic																	
	Mesotrophic																	
	Oligotrophic																	
	Dystrophic																	
Organics	Saprophilic																	
	Facultative																	
	Saproxenous											X						
	Saprophobic				X				X									
O_2	Euoxyphilous		X		X		X		X			X						
	Mesoxyphilous										X							(49) O_2 consumption decr. w. O_2 concentration. see below
	Oligoxyphilous																	
Temperature	Euthermal																	
	Mesothermal				X	X	X	X	X		X							
	Oligothermal		X	X		X												
	Stenothermal																	
	Metathermal		X	X	X				X									
	Eurythermal					X												
Turbidity	Eulichtophilous																	
	Mesolichtophilous																	
	Polylichtophilous																	
	Oligolichtophilous																	
Current	Limnobiontic																	
	Limnophilous																	
	Indifferent																	
	Rheophilous																	
	Rheobiontic					X							X					
General Habitat	Lake																	
	Pond																	
	River											X	X					
	Stream	X	X	X	X	X			X							X		
	Other																	
Specific Habitat	Epibenthic																	
	Embenthic																	
	Epipelic																	
	Episabulic																	
	Epilithic											X	X					
	Epixylous																	
	Epiphytic											X						(96) leaf packs
Emergence	Winter																	
	Spring											X	X	X	X			
	Summer				X							X	X	X	X			
	Autumn																	
Feeding	Predator	X							X				X			X		
	Herbivore																	
	Omnivore																	
	Scavenger																	

Other Water Chemistry, Toxicity, Misc.

O_2 (continued)

(49) O_2 consumption independent of body weight.
(88) minimum O_2 survived for 12 hrs = 1.8 ppm

(19) 0.1-0.4 ppm D.O.C.
170 ppm bicarb.

(40) 162-234 ppm $CaCO_3$ alkalinity
222-320 ppm $CaCO_3$ hardness
395-600 µmhos conductivity

(50) <.33 mg/l $CaCO_3$ hardness
<.05 mg/l Cu, Zn, Ca
3.2 mg/l Cu = lethal threshold
incr. Cu concentration results in changed O_2 consumption

(88) 60-67 ppm alkalinity

Pictetiella expansa (Banks)

Parameters		References 98	103	104	111	112	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutrient	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Temperature	Euthermal						
	Mesothermal						
	Oligothermal						
	Stenothermal						
	Metathermal						
	Eurythermal						
Turbidity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						(98) 9000-9700' el
	Pond						(104) 10500' el
	River						
	Stream				X	X	
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emergence	Winter						
	Spring						
	Summer		X	X	X		
	Autumn				X		
Feeding	Predator						
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Podmosta decepta (Frison)

Parameters		23	102	109	110	112	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal						
	Oligothermal					X	
	Stenothermal						
	Metathermal						
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						(109) 6500-9250' el
	Pond						
	River					X	(109) temporary str
	Stream	X	X	X	X	X	
	Other			X			
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emer-gence	Winter						
	Spring	X	X		X	X	
	Summer		X	X		X	
	Autumn						
Feeding	Predator						
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Podmosta delicatula (Claassen)

Parameters		References 80	85	98	100	102	104	109	110	112	Notes
pH	Acidobiontic										
	Acidophilous										
	Neutral							X			
	Alkaliphilous	X									
	Alkalibiontic										
	Indifferent										
Nutrient	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Organics	Saprophilic										
	Facultative										
	Saproxenous										
	Saprophobic										
O_2	Euoxyphilous							X			
	Mesoxyphilous										
	Oligoxyphilous										
Temperature	Euthermal										
	Mesothermal							X			
	Oligothermal							X			
	Stenothermal										
	Metathermal										
	Eurythermal							X			
Turbidity	Eulichtophilous										
	Mesolichtophilous										
	Polylichtophilous										
	Oligolichtophilous										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic										
General Habitat	Lake										(80) 1900 m el
	Pond										(85) 7870' el
	River							X		X	(98) 8000-11500' el
	Stream	X				X		X	X	X	(100) 10000' el
	Other							X			see below
Specific Habitat	Epibenthic										
	Embenthic										
	Epipelic										
	Episabulic										
	Epilithic										
	Epixylous										
	Epiphytic										
Emergence	Winter										
	Spring	X				X			X	X	
	Summer	X			X	X		X		X	
	Autumn										
Feeding	Predator										
	Herbivore										
	Omnivore										
	Scavenger										
Other Water Chemistry, Toxicity, Misc.	General Habitat (continued) (109) 6750-9250' el (80) 30-75 ppm m.o. alkalinity										

Podmosta obscura (Frison)

Parameters		References 102	122	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal		X	
	Stenothermal			
	Metathermal		X	
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			(122) 68 m el
	Pond			
	River			
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter	X		
	Spring	X		
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Prostoia besametsa (Ricker)

Parameters		54	55	64	70	80	85	100	102	108	109	111	112	Notes
pH	Acidobiontic													
	Acidophilous													
	Neutral										X			
	Alkaliphilous					X								
	Alkalibiontic													
	Indifferent													
Nutrient	Eutrophic													
	Mesotrophic													
	Oligotrophic													
	Dystrophic													
Organics	Saprophilic													
	Facultative													
	Saproxenous													
	Saprophobic													
O_2	Euoxyphilous										X			
	Mesoxyphilous													
	Oligoxyphilous													
Temperature	Euthermal													
	Mesothermal										X			
	Oligothermal				X						X			
	Stenothermal													
	Metathermal				X									
	Eurythermal										X			
Turbidity	Eulichtophilous													
	Mesolichtophilous													
	Polylichtophilous													
	Oligolichtophilous													
Current	Limnobiontic													
	Limnophilous													
	Indifferent													
	Rheophilous													
	Rheobiontic		X		X									
General Habitat	Lake													(54) >8500' el
	Pond													(80) 1900 m el
	River		X						X		X	X	X	(85) 5600-9700' el
	Stream				X	X			X		X	X	X	(100) 7200-9000' el
	Other													(109) 6500-9000' el
Specific Habitat	Epibenthic													
	Embenthic													
	Epipelic													
	Episabulic													
	Epilithic													
	Epixylous													
	Epiphytic													
Emergence	Winter							X			X			
	Spring			X	X	X		X	X	X	X	X	X	
	Summer				X	X		X	X		X	X	X	
	Autumn													
Feeding	Predator													
	Herbivore													
	Omnivore													
	Scavenger													
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity													

Prostoia completa (Walker)

Parameters		References 39	98	105	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous	X			
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal	X			
	Oligothermal	X			
	Stenothermal				
	Metathermal				
	Eurythermal	X			
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River	X		X	
	Stream		X	X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring	X	X		
	Summer				
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Prostoia similis (Hagen)

Parameters		61	77	104	105	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral	X				
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal					
	Oligothermal	X				
	Stenothermal					
	Metathermal					
	Eurythermal	X				
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					
	Pond					
	River					
	Stream	X			X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring	X				
	Summer					
	Autumn					
Feeding	Predator					
	Herbivore		X			
	Omnivore					
	Scavenger		X			

Other Water Chemistry, Toxicity, Misc.

(61) 14-18 ppm $CaCO_3$ alkalinity

Pteronarcella badia (Hagen)

Parameters		References																									Notes
		4	20	26	29	30	34	36	53	54	55	71	85	98	103	104	108	109	111	112	117	118					
pH	Acidobiontic																										
	Acidophilous																				X	X					(117,118) TL_m^{90} = pH 4.52
	Neutral																										
	Alkaliphilous				X		X	X										X									TL_m^{96} = pH 4.37
	Alkalibiontic																										
	Indifferent																										see below
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous						X											X									
	Mesoxyphilous		X		X			X													X	X					
	Oligoxyphilous																										see below
Temperature	Euthermal																										
	Mesothermal				X	X			X									X									(34,117,118)
	Oligothermal	X						X	X									X			X	X					TL_m^{96} = 24.4°C
	Stenothermal																										(53) 10°C-13% mort.
	Metathermal	X			X	X	X																				after 24 hr.
	Eurythermal																	X									see below
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous				X																						
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous			X							X	X															
	Rheobiontic										X																
General Habitat	Lake																										(29) 5500-7100' el
	Pond																										(30) all elevations
	River			X	X						X							X	X	X							(54) 6900-10800' el
	Stream	X					X	X			X	X			X			X	X	X	X	X					(98) 5600-7800' el
	Other																										see below
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic											X															
Emergence	Winter																										
	Spring	X		X	X										X	X	X	X	X	X	X	X					(117,118) early emerg.
	Summer	X			X											X	X	X	X	X	X	X					with incr. T°.
	Autumn																	X									
Feeding	Predator																										(26) early instar-
	Herbivore														X												detritavore
	Omnivore			X						X		X															
	Scavenger																X										

Other Water Chemistry, Toxicity, Misc.

pH (continued)
(117,118) 2.0×10^{-4} M H_2SO_4: TL_m^{96} = pH 3.7
3.9×10^{-5} M HCl: TL_m^{96} = pH 4.4

O_2 (continued)
(36,117,118) 4.4 mg/l O_2-50% surv. - 69 days
2.0 mg/l O_2-30% surv. - 30 days
TL_m^{96} = 2.4 mg/l O_2-21% saturation

(29) 65-222 ppm $CaCO_3$ alkalinity
(34) 135 ppm $CaCO_3$ alkalinity

Temperature (continued)
(53) 29% mort. after 72 hr
(117,118) 50% mort. - 18.1°C - 24 days
45% surv. - 17.5°C - 38 days
100% surv. - 12.5-13.5°C - 87 days
100% surv. - 18.5-20°C - 10 days
0% surv. - 18.5-20°C - 55 days

General Habitat (continued)
(85) 6900' el
(111,112) <7700' el
(109) 6250-8000' el

Pteronarcella regularis (Hagen)

Parameters		80	100	102	103	104	112	122	Notes
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous	X							
	Alkalibiontic								
	Indifferent								
Nutri-ent	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organ-ics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous								
	Mesoxyphilous								
	Oligoxyphilous								
Tempera-ture	Euthermal								
	Mesothermal								
	Oligothermal							X	
	Stenothermal								
	Metathermal							X	
	Eurythermal								
Turbid-ity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
General Habitat	Lake								(122) 198,213 m el (80) 1900 m el
	Pond								
	River			X			X		
	Stream	X	X	X	X		X		
	Other								
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic								
Emer-gence	Winter								
	Spring			X			X		
	Summer	X	X		X		X		
	Autumn								
Feeding	Predator								
	Herbivore				X				
	Omnivore								
	Scavenger								
Other Water Chemistry, Toxicity, Misc.	(80) 30-35 ppm m.o. alkalinity								

Pteronarcys californica Newport

	Parameters	References																									Notes
		4	15	20	22	29	30	33	34	36	37	52	54	55	56	57	71	72	100	102	103	104	108	109	110	111	
pH	Acidobiontic																										
	Acidophilous																										
	Neutral											X												X			
	Alkaliphilous					X			X	X																	
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous					X			X			X												X			
	Mesoxyphilous						X			X	X	X															
	Oligoxyphilous																										see below
Temperature	Euthermal																										
	Mesothermal					X	X	X			X							X						X	X		(34) TL_m^{96} = 27.0°C
	Oligothermal	X			X					X		X						X						X			(37) Opt. T° = 55-65° F
	Stenothermal																										
	Metathermal	X							X		X	X															
	Eurythermal																	X						X			
Turbidity	Eulichtophilous					X																					
	Mesolichtophilous									X																	
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous													X													
	Rheobiontic			X										X													
General Habitat	Lake																										(29) 5200' el
	Pond																										(30) <5900' el
	River		X	X	X		X				X			X			X	X		X				X			(54) 6700-7800' el
	Stream	X					X	X	X	X				X	X					X	X			X	X		(55) <8000' el
	Other																										see below
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										(111,112) debris
	Epilithic			X			X	X			X						X									X	
	Epixylous																										
	Epiphytic																X									X	
Emergence	Winter																										
	Spring	X				X													X	X		X	X	X	X	X	
	Summer	X		X		X													X		X	X	X	X	X	X	
	Autumn																										
Feeding	Predator																										
	Herbivore		X	X																	X		X			X	(108) shredder
	Omnivore															X											
	Scavenger		X																								

Other Water Chemistry, Toxicity, Misc.

O_2 (continued)

(36) TL_m^{96} = 3.2 mg/l O_2-28% saturation

TL_m^{96} = 3.9 mg/l O_2-34% saturation

min O_2 = 4.8 mg/l 40% survival over 97 days

(52) O_2 consumption increases as environmental O_2 concentration increases. With O_2 and T° unvariable, increased flow results in decreased mortality.

General Habitat (continued)

(72) low elevation

(109) 6250-8000' el

(22) toxicity of mercurials: phenyl mercuric chloride > methylmercuric chloride > mercuric chloride.

(29) 115-187 ppm $CaCO_3$ alkalinity, 0 ppm CO_2

(34) 135 ppm $CaCO_3$

(52) 200-230 ppm $CaCO_3$ alkalinity

(57) TL_m^{30} day for co-ral, methylparathion, toxaphene, lindane

Pteronarcys californica Newport (continued)

Parameters		References 112	116	117	118	119	121	Notes
pH	Acidobiontic							(117,118) TL_m^{96} = pH 4.6 TL_m^{90} = pH 4.95
	Acidophilous							
	Neutral							
	Alkaliphilous		X	X	X	X	X	
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic		X					
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous					X	X	see below
	Mesoxyphilous		X	X	X			
	Oligoxyphilous							
Tempera-ture	Euthermal							(117,118) TL_m^{96} = 27°C
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
Turbid-ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic							
General Habitat	Lake							
	Pond							
	River							
	Stream			X	X			
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic	X						
	Epixylous							
	Epiphytic	X						
Emer-gence	Winter							(117,118) emerged in Jan. with T° = 18.4°C for 25 days.
	Spring	X		X	X			
	Summer	X		X	X			
	Autumn							
Feeding	Predator							
	Herbivore	X						
	Omnivore							
	Scavenger							

Other Water Chemistry, Toxicity, Misc.

O_2 (continued)

(117,118) TL_m^{96} = 3.2-3.8 mg/l O_2 with 28-34% saturation
4.8 mg/l O_2 with 40% survival for 97 days

(116) 8.0 ppm $CaCO_3$ alkalinity, 0.12 ppm nitrates, TL_m^{96} for DDT, malathion, parathion

(119) TL_m for 4,5,10,15,20,25,30 days for DDT, di-syston, dylox, malathion, parathion

(121) TL_m 48,72,96 hours for DDT, aldrin, dieldrin, endrin, parathion, malathion, guthion, bayer-29493, di-syston, dylox

Pteronarcys dorsata (Say)

Parameters		References														Notes
		5	6	68	74	75	77	87	89	96	104	113	117	118	124	
pH	Acidobiontic															(6) TL^{30}_{50} = 5.0 pH 100% surv. pH 7, 0% surv. pH 3 see below
	Acidophilous															
	Neutral	X	X													
	Alkaliphilous			X									X	X	X	
	Alkalibiontic															
	Indifferent															
Nutri-ent	Eutrophic															
	Mesotrophic														X	
	Oligotrophic															
	Dystrophic															
Organ-ics	Saprophilic															
	Facultative															
	Saproxenous															
	Saprophobic											X				
O_2	Euoxyphilous	X		X									X	X	X	(6) 8.47-8.70 mg/1 O_2
	Mesoxyphilous		X													
	Oligoxyphilous															
Tempera-ture	Euthermal															(68) TL^{96}_{m} = 29.5°C (124) feed actively at 15-20°C; 35% emerged at 20°C, 90% at 15°C.
	Mesothermal		X												X	
	Oligothermal	X											X	X		
	Stenothermal															
	Metathermal	X													X	
	Eurythermal		X													
Turbid-ity	Eulichtophilous															
	Mesolichtophilous															
	Polylichtophilous															
	Oligolichtophilous															
Current	Limnobiontic															
	Limnophilous															
	Indifferent															
	Rheophilous															
	Rheobiontic								X	X	X	X				
General Habitat	Lake															
	Pond															
	River				X	X		X	X							
	Stream	X	X							X						
	Other															
Specific Habitat	Epibenthic															(89) debris (104) trash below rapids
	Embenthic															
	Epipelic															
	Episabulic															
	Epilithic									X						
	Epixylous							X								
	Epiphytic								X		X					
Emer-gence	Winter															
	Spring							X		X						
	Summer															
	Autumn															
Feeding	Predator															
	Herbivore									X						
	Omnivore						X									
	Scavenger								X	X		X				(113) shredder

Other Water Chemistry, Toxicity, Misc.

pH (continued)
(5) TL^{96}_{m} = 4.25 pH, 100% surv. pH 7, 0% surv. pH 3
(117,118) TL^{96}_{m} = 4.25 pH

(68) 40 ppm t. alkalinity
35-40 ppm $CaCO_3$ t. hardness

(124) 42-46 mg/1 $CaCO_3$ hardness
.0018 mg/1 Cu
2-3 mg/1 chlorine
0.25-0.5 mg/1 t. nitrogen
0.5-1.5 mg/1 acidity

Pteronarcys pictetii Hagen

Parameters		References						Notes
		18	62	77	96	101	104	
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous							
	Alkalibiontic							
	Indifferent							
Nutri- ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ- ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous							
	Mesoxyphilous							
	Oligoxyphilous							
Tempera- ture	Euthermal							
	Mesothermal				X			
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
Turbid- ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic					X		
General Habitat	Lake							
	Pond							
	River					X		
	Stream		X		X			
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic							
	Epixylous				X	X		(101) leaf packs
	Epiphytic				X	X		
Emer- gence	Winter							
	Spring				X	X	X	
	Summer				X	X	X	
	Autumn							
Feeding	Predator							
	Herbivore	X		X				
	Omnivore							
	Scavenger	X	X	X				
Other Water Chemistry, Toxicity, Misc.	(101,104) *P. nobilis* is a synonym.							

Pteronarcys princeps Banks

Parameters		72	100	102	103	104	110	111	122	Notes
pH	Acidobiontic									
	Acidophilous									
	Neutral									
	Alkaliphilous									
	Alkalibiontic									
	Indifferent									
Nutri-ent	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Organ-ics	Saprophilic									
	Facultative									
	Saproxenous									
	Saprophobic									
O_2	Euoxyphilous									
	Mesoxyphilous									
	Oligoxyphilous									
Tempera-ture	Euthermal									
	Mesothermal									
	Oligothermal	X					X		X	
	Stenothermal									
	Metathermal								X	
	Eurythermal									
Turbid-ity	Eulichtophilous						X			
	Mesolichtophilous									
	Polylichtophilous									
	Oligolichtophilous									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Lake									(122) 198 m el
	Pond									
	River			X			X	X		
	Stream	X		X			X	X	X	
	Other									
Specific Habitat	Epibenthic									
	Embenthic									
	Epipelic									
	Episabulic									
	Epilithic									
	Epixylous									
	Epiphytic									
Emer-gence	Winter									
	Spring		X	X	X	X	X	X		
	Summer		X					X		
	Autumn									
Feeding	Predator									
	Herbivore									
	Omnivore									
	Scavenger									
Other Water Chemistry, Toxicity, Misc.										

Remenus bilobatus (Needham & Claassen)

Parameters		References 103	104	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream			
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring			
	Summer	X	X	
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Rickera sorpta (Needham & Claassen)

Parameters		References				Notes
		79	100	102	104	
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous	X				
	Alkalibiontic					
	Indifferent					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Temperature	Euthermal					
	Mesothermal	X				
	Oligothermal	X				
	Stenothermal					
	Metathermal					
	Eurythermal	X				
Turbidity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					
	Pond					(104) 6500-7100' el
	River			X		
	Stream	X		X		
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emergence	Winter					
	Spring	X		X		
	Summer	X	X	X	X	
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.	(100) *R. venusta* is a synonym.					

Setvena bradleyi (Smith)

Parameters		References 102	104	112	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream	X		X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring		X	X	
	Summer	X	X	X	
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Setvena tibialis (Banks)

Parameters		References 102	103	104	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbidity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic		X		
General Habitat	Lake				
	Pond				
	River				
	Stream	X			
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emergence	Winter				
	Spring				
	Summer	X			
	Autumn				
Feeding	Predator		X		
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Shipsa rotunda (Claassen)

Parameters		39	77	96	104	105	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous	X					
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal						
	Oligothermal	X					
	Stenothermal						
	Metathermal	X					
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						
	Pond						
	River			X		X	
	Stream	X					
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic			X			
	Epixylous						
	Epiphytic			X			
Emer-gence	Winter						
	Spring	X		X	X		
	Summer			X			
	Autumn						
Feeding	Predator						
	Herbivore		X				
	Omnivore						
	Scavenger		X				

Other Water Chemistry, Toxicity, Misc.

(39) 162-234 ppm $CaCO_3$ alkalinity
222-320 ppm $CaCO_3$ hardness
395-600 µmhos conductivity

Sierraperla cora (Needham & Smith)

Parameters		References	Notes
		104	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring	X	
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Skwala curvata (Hanson)

Parameters		References 10	15	79	80	100	102	110	112	Notes
pH	Acidobiontic									
	Acidophilous									
	Neutral									
	Alkaliphilous			X	X					
	Alkalibiontic									
	Indifferent									
Nutri-ent	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Organ-ics	Saprophilic									
	Facultative									
	Saproxenous									
	Saprophobic									
O_2	Euoxyphilous									
	Mesoxyphilous									
	Oligoxyphilous									
Tempera-ture	Euthermal									
	Mesothermal			X						
	Oligothermal			X				X	X	
	Stenothermal									
	Metathermal									
	Eurythermal			X						
Turbid-ity	Eulichtophilous							X		
	Mesolichtophilous									
	Polylichtophilous									
	Oligolichtophilous									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous			X						
	Rheobiontic									
General Habitat	Lake									(79) 1670m-2000m el (80) 1900 m el
	Pond									
	River							X		
	Stream			X	X		X	X	X	
	Other									
Specific Habitat	Epibenthic									
	Embenthic									
	Epipelic									
	Episabulic									
	Epilithic									
	Epixylous									
	Epiphytic									
Emer-gence	Winter				X	X	X	X	X	
	Spring			X	X	X	X	X	X	
	Summer			X						
	Autumn									
Feeding	Predator	X								
	Herbivore									
	Omnivore		X	X						
	Scavenger									
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity									

Skwala parallela (Frison)

	Parameters	10	26	29	36	53	54	55	71	72	100	102	104	108	109	110	111	112	117	118	120	Notes
pH	Acidobiontic																					(117,118,120) TL_m^{96} = pH 4.6,2.5x10^{-5}M HCl TL_m^{96} = pH 4.1,8.0x10^{-5}M H_2SO_4 (117,118) TL_m^{96} = pH5.33
	Acidophilous																					
	Neutral														X				X	X	X	
	Alkaliphilous			X	X																	
	Alkalibiontic																					
	Indifferent																					
Nutrient	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Organics	Saprophilic																					
	Facultative																					
	Saproxenous																					
	Saprophobic																					
O_2	Euoxyphilous			X					X						X							
	Mesoxyphilous			X		X													X	X		
	Oligoxyphilous																					see below
Temperature	Euthermal																					(117,118) 13°C, 62 days-100% surv. 18-20°C, 3 days-10% surv. see below
	Mesothermal			X	X										X	X						
	Oligothermal									X					X	X						
	Stenothermal																					
	Metathermal			X						X												
	Eurythermal														X							
Turbidity	Eulichtophilous			X																		
	Mesolichtophilous																					
	Polylichtophilous															X						
	Oligolichtophilous																					
Current	Limnobiontic																					
	Limnophilous																					
	Indifferent																					
	Rheophilous							X														
	Rheobiontic							X	X													
General Habitat	Lake																					(29) 5300' el (54) 6800-8900' el (55) <8000' el (72) low elevation (109) 6000-9250' el
	Pond																					
	River		X	X				X		X		X			X	X	X	X				
	Stream				X			X							X		X	X				
	Other																					
Specific Habitat	Epibenthic																					
	Embenthic																					
	Epipelic																					
	Episabulic																					
	Epilithic								X													
	Epixylous																					
	Epiphytic																					
Emergence	Winter											X			X		X	X				
	Spring										X	X	X	X	X	X	X	X				
	Summer																X	X				
	Autumn																					
Feeding	Predator	X	X						X													
	Herbivore						X															
	Omnivore		X											X								
	Scavenger																					

Other Water Chemistry, Toxicity, Misc.

O_2 (continued)

(53,117,118) 1 cc/l O_2, 15.6°C, 10 hrs-82% mort.
24 hrs-88.5% mort.
34 hrs-100% mort.

(36,117,118) 3.4 mg/l O_2, 18 days-10% surv.
4.2 mg/l O_2, 28 days-20% surv.

Temperature (continued)
(117,118) 18-20°C, 27 days-5% surv.
18-20°C, 31 days-0% surv.
15°C, 41 days-55% surv.
emerged 2 months early with 6 weeks at 15°C

(19,104) *P. americana* is a synonym.

(29) 115-192 ppm $CaCO_3$ alk
0-2.5 ppm CO_2

Soliperla campanula (Jewett)

Parameters		102	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring	X	
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Soliperla fenderi (Jewett)

Parameters		References	Notes
		102	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring		
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Soliperla quadrispinula (Jewett)

Parameters		References 100	102	122	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal			X	
	Oligothermal			X	
	Stenothermal				
	Metathermal			X	
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic			X	
General Habitat	Lake				(122) 198,213 m el
	Pond				
	River				
	Stream		X	X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring	X	X		
	Summer		X		
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Soliperla thyra (Needham & Smith)

Parameters		References		Notes
		100	104	
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream		X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring	X		
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Soyedina interrupta (Claassen)

Parameters		72	80	102	104	112	122	Notes
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous		X					
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous							
	Mesoxyphilous							
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal							
	Oligothermal						X	
	Stenothermal							
	Metathermal						X	
	Eurythermal							
Turbid-ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic							
General Habitat	Lake					X		(72) low-mid el (80) 1900 m el (122) 213,198 m el
	Pond							
	River							
	Stream	X	X	X		X	X	
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic							
	Epixylous							
	Epiphytic							
Emer-gence	Winter							
	Spring		X	X	X	X	X	
	Summer			X		X		
	Autumn						X	
Feeding	Predator							
	Herbivore							
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity							

Soyedina nevadensis (Claassen)

Parameters		References	Notes
		100	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		(100) 5000-8500' el
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Soyedina producta (Claassen)

Parameters		72	80	100	102	110	122	Notes
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous		X					
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic							
O_2	Euoxyphilous							
	Mesoxyphilous							
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal							
	Oligothermal	X					X	
	Stenothermal							
	Metathermal						X	
	Eurythermal							
Turbid-ity	Eulichtophilous					X		
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic							
General Habitat	Lake							(72) low-mid el (80) 1900m el (110) to 1700 m el (122) 213,198 m el
	Pond							
	River					X		
	Stream	X	X		X	X	X	
	Other							
Specific Habitat	Epibenthic							
	Embenthic							
	Epipelic							
	Episabulic							
	Epilithic							
	Epixylous							
	Epiphytic							
Emer-gence	Winter							
	Spring		X	X	X	X	X	
	Summer				X			
	Autumn							
Feeding	Predator							
	Herbivore							
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity							

Soyedina vallicularia (Wu)

Parameters		References 39	59	103	104	105	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous	X	X				
	Alkalibiontic						
	Indifferent						
Nutrient	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous		X				
	Mesoxyphilous						(59) 9-14 mg/l O_2, >90% sat
	Oligoxyphilous						
Temperature	Euthermal						
	Mesothermal						
	Oligothermal		X				
	Stenothermal						
	Metathermal		X				
	Eurythermal						
Turbidity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic		X				
General Habitat	Lake						(59) 145-160 m el
	Pond						
	River						
	Stream	X	X	X		X	
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic			X			(103) leaf packs
Emergence	Winter						
	Spring	X		X	X		
	Summer			X			
	Autumn						
Feeding	Predator						
	Herbivore			X			
	Omnivore						
	Scavenger			X		X	

Other Water Chemistry, Toxicity, Misc.

(39) 162-234 ppm $CaCO_3$ alkalinity
222-320 ppm $CaCO_3$ hardness
395-600 µmhos conductivity

(59) 85-240 mg/l t. alkalinity
6-25 mg/l free CO_2

Soyedina washingtoni (Claassen)

Parameters		References 104	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring	X	
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.	(104) *N. carolinensis* is a synonym.		

Strophopteryx fasciata (Burmeister)

Parameters		28	42	75	90	94	96	99	101	103	104	Notes
pH	Acidobiontic											
	Acidophilous											
	Neutral				X							
	Alkaliphilous	X	X	X								
	Alkalibiontic											
	Indifferent											
Nutri-ent	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Organ-ics	Saprophilic											
	Facultative											
	Saproxenous											
	Saprophobic	X		X								
O_2	Euoxyphilous	X		X								
	Mesoxyphilous											
	Oligoxyphilous											
Tempera-ture	Euthermal											
	Mesothermal	X	X	X	X							
	Oligothermal											
	Stenothermal											
	Metathermal	X										
	Eurythermal		X	X								
Turbid-ity	Eulichtophilous							X				
	Mesolichtophilous											
	Polylichtophilous											
	Oligolichtophilous											
Current	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous					X				X		
	Rheobiontic		X				X		X			
General Habitat	Lake											
	Pond											
	River					X	X	X	X			
	Stream	X		X	X		X	X				
	Other											
Specific Habitat	Epibenthic											
	Embenthic											
	Epipelic											
	Episabulic											
	Epilithic							X	X			
	Epixylous											
	Epiphytic											
Emer-gence	Winter					X		X	X	X	X	
	Spring		X			X	X		X	X	X	
	Summer											
	Autumn							X				
Feeding	Predator											
	Herbivore							X	X	X		
	Omnivore											(99) diatoms
	Scavenger											

Other Water Chemistry, Toxicity, Misc.

(42) 212-232 ppm $CaCO_3$ alkalinity
233-288 ppm $CaCO_3$ hardness
485-502 μmhos conductivity

(90) 8 ppm m.o. alkalinity
3.5 ppm CO_2

Strophopteryx ostra Ricker & Ross

Parameters		References: 114	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Suwallia autumna (Hoppe)

Parameters		References 102	110	112	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River	X	X	X	
	Stream	X	X	X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring				
	Summer			X	
	Autumn	X	X	X	
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Suwallia lineosa (Banks)

Parameters		References				Notes
		102	104	109	112	
pH	Acidobiontic					
	Acidophilous					
	Neutral			X		
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous			X		
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal			X		
	Oligothermal			X		
	Stenothermal					
	Metathermal					
	Eurythermal			X		
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					
	Pond					(109) 6500-9250' el
	River			X	X	
	Stream	X		X	X	(109) temporary str
	Other			X		
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring				X	
	Summer	X	X	X	X	
	Autumn				X	
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Suwallia marginata (Banks)

Parameters		41	74	104	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal	X			
	Stenothermal				
	Metathermal	X			
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream	X			
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring			X	
	Summer	X	X	X	
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Suwallia pallidula (Banks)

Parameters		23	30	54	55	72	80	98	100	102	103	104	108	109	110	111	112	122	Notes
pH	Acidobiontic																		
	Acidophilous																		
	Neutral																		
	Alkaliphilous						X							X					
	Alkalibiontic																		
	Indifferent																		
Nutrient	Eutrophic																		
	Mesotrophic																		
	Oligotrophic																		
	Dystrophic																		
Organics	Saprophilic																		
	Facultative																		
	Saproxenous																		
	Saprophobic																		
O_2	Euoxyphilous													X					
	Mesoxyphilous																		
	Oligoxyphilous																		
Temperature	Euthermal																		
	Mesothermal													X				X	
	Oligothermal					X								X				X	
	Stenothermal																		
	Metathermal																	X	
	Eurythermal													X					
Turbidity	Eulichtophilous																		
	Mesolichtophilous																		
	Polylichtophilous																		
	Oligolichtophilous																		
Current	Limnobiontic																		
	Limnophilous																		
	Indifferent																		
	Rheophilous																		
	Rheobiontic				X						X								
General Habitat	Lake																		
	Pond																		(54) 7000-10300' el
	River				X	X				X				X		X	X		(72) low el
	Stream	X			X		X			X				X		X	X	X	(80) 1900 m el
	Other				X									X					(98) 5200-10600' el see below
Specific Habitat	Epibenthic																		
	Embenthic																		
	Epipelic																		
	Episabulic																		
	Epilithic																		
	Epixylous																		
	Epiphytic																		
Emergence	Winter																		
	Spring								X		X	X	X	X		X	X		
	Summer	X					X		X	X	X	X	X	X	X	X	X		
	Autumn	X					X			X			X		X	X	X		
Feeding	Predator										X								
	Herbivore																		
	Omnivore																		
	Scavenger																		

Other Water Chemistry, Toxicity, Misc.

General Habitat (continued)

(100) 3880-6000' el
(109) 6250-9250' el
(110) to highest el
(122) 152,68 m el

(55,109) temporary str

(80) 30-75 ppm m.o. alkalinity

(72) given as *S. dubia*

Sweltsa albertensis (Needham & Claassen)

Parameters		References 102	104	112	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-icsm	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River			X	
	Stream	X		X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring			X	
	Summer	X	X	X	
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Sweltsa borealis (Banks)

Parameters		2	23	30	54	55	72	98	100	102	103	104	109	110	111	112	122	Notes
pH	Acidobiontic																	
	Acidophilous																	
	Neutral												X					
	Alkaliphilous																	
	Alkalibiontic																	
	Indifferent																	
Nutri-ent	Eutrophic																	
	Mesotrophic																	
	Oligotrophic												X					
	Dystrophic																	
Organ-ics	Saprophilic																	
	Facultative																	
	Saproxenous																	
	Saprophobic																	
O_2	Euoxyphilous												X					
	Mesoxyphilous																	
	Oligoxyphilous																	
Tempera-ture	Euthermal																	
	Mesothermal																	
	Oligothermal			X									X				X	
	Stenothermal																	
	Metathermal												X				X	
	Eurythermal																	
Turbid-ity	Eulichtophilous																	
	Mesolichtophilous																	
	Polylichtophilous																	
	Oligolichtophilous																	
Current	Limnobiontic																	
	Limnophilous																	
	Indifferent																	
	Rheophilous																	
	Rheobiontic					X												
General Habitat	Lake																	
	Pond																	(30) >5900' el
	River					X							X		X	X		(54) >8500' el
	Stream		X				X			X			X	X	X	X	X	(72) low el
	Other	X				X												(98) 5600-11000' el see below
Specific Habitat	Epibenthic																	
	Embenthic																	
	Epipelic																	
	Episabulic																	
	Epilithic																	
	Epixylous																	
	Epiphytic																	
Emer-gence	Winter																	
	Spring		X							X	X		X	X	X	X		
	Summer		X						X	X	X		X		X	X		
	Autumn		X										X			X		
Feeding	Predator																	
	Herbivore																	
	Omnivore																	
	Scavenger																	

Other Water Chemistry, Toxicity, Misc.

General Habitat (continued)

(109) 6500-7750' el
(122) 213,198,152 m el

(2) Seep

(55) temporary str

Sweltsa coloradensis (Banks)

Parameters		54	55	85	100	102	103	104	108	109	110	111	112	122	Notes
pH	Acidobiontic														
	Acidophilous														
	Neutral														
	Alkaliphilous									X					
	Alkalibiontic														
	Indifferent														
Nutri-ent	Eutrophic														
	Mesotrophic														
	Oligotrophic														
	Dystrophic														
Organ-ics	Saprophilic														
	Facultative														
	Saproxenous														
	Saprophobic														
O_2	Euoxyphilous									X					
	Mesoxyphilous														
	Oligoxyphilous														
Tempera-ture	Euthermal														
	Mesothermal									X					
	Oligothermal									X				X	
	Stenothermal														
	Metathermal													X	
	Eurythermal									X					
Turbid-ity	Eulichtophilous														
	Mesolichtophilous														
	Polylichtophilous														
	Oligolichtophilous														
Current	Limnobiontic														
	Limnophilous														
	Indifferent														
	Rheophilous														
	Rheobiontic		X												
General Habitat	Lake														(54) 7200-10300' el
	Pond														(85) 7870' el
	River		X							X		X	X		(109) 6500-9000' el
	Stream		X			X				X	X	X	X	X	(122) 198,152,68 m el
	Other									X					(109) temporary str
Specific Habitat	Epibenthic														
	Embenthic														
	Epipelic														
	Episabulic														
	Epilithic														
	Epixylous														
	Epiphytic														
Emer-gence	Winter														
	Spring					X			X	X	X	X	X		
	Summer				X	X	X	X	X	X		X	X		
	Autumn														
Feeding	Predator														
	Herbivore														
	Omnivore														
	Scavenger														
Other Water Chemistry, Toxicity, Misc.															

Sweltsa continua (Banks)

Parameters		References 100	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		(100) 6500' el
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring		
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Sweltsa exquisita (Frison)

Parameters		23	72	102	110	112	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutrient	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Temperature	Euthermal						
	Mesothermal						
	Oligothermal		X		X		
	Stenothermal						
	Metathermal						
	Eurythermal						
Turbidity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						(110) to 3500' el (72) to high el
	Pond						
	River						
	Stream	X	X	X	X	X	
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emergence	Winter						
	Spring	X		X	X	X	
	Summer	X		X	X	X	
	Autumn	X					
Feeding	Predator						
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Sweltsa fidelis (Banks)

Parameters		References								Notes
		72	100	102	104	110	111	112	122	
pH	Acidobiontic									
	Acidophilous									
	Neutral									
	Alkaliphilous									
	Alkalibiontic									
	Indifferent									
Nutri-ent	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Organ-ics	Saprophilic									
	Facultative									
	Saproxenous									
	Saprophobic									
O_2	Euoxyphilous									
	Mesoxyphilous									
	Oligoxyphilous									
Tempera-ture	Euthermal									
	Mesothermal									
	Oligothermal								X	
	Stenothermal									
	Metathermal								X	
	Eurythermal									
Turbid-ity	Eulichtophilous									
	Mesolichtophilous									
	Polylichtophilous									
	Oligolichtophilous									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Lake									
	Pond									(72) high el
	River			X				X		(100) 9000' el
	Stream	X		X		X		X	X	(110) 5000' el
	Other									(122) 213,198,152 m el
Specific Habitat	Epibenthic									
	Embenthic									
	Epipelic									
	Episabulic									
	Epilithic									
	Epixylous									
	Epiphytic									
Emer-gence	Winter									
	Spring	X		X			X	X		
	Summer	X		X	X	X	X	X		
	Autumn							X		
Feeding	Predator									
	Herbivore									
	Omnivore									
	Scavenger									
Other Water Chemistry, Toxicity, Misc.	(72,110) includes *S. revelstoka*									

Sweltsa lamba (Needham & Claassen)

Parameters		References 72	102	103	104	109	111	112	Notes
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous								
	Alkalibiontic								
	Indifferent								
Nutri-ent	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organ-ics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous								
	Mesoxyphilous								
	Oligoxyphilous								
Tempera-ture	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
Turbid-ity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
General Habitat	Lake								(98) 8000-11000' el
	Pond								(109) 6500-9250' el
	River					X		X	
	Stream		X			X	X	X	(109) temporary str
	Other					X			
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic								
Emer-gence	Winter								
	Spring						X	X	
	Summer		X	X	X	X	X	X	
	Autumn					X	X	X	
Feeding	Predator								
	Herbivore								
	Omnivore								
	Scavenger								
Other Water Chemistry, Toxicity, Misc.									

Sweltsa lateralis (Banks)

Parameters		References: 104	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Sweltsa mediana (Banks)

Parameters		19	28	83	103	104	Notes
pH	Acidobiontic						
	Acidophilous			X			
	Neutral						
	Alkaliphilous	X	X				
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic		X				
O_2	Euoxyphilous	X	X	X			
	Mesoxyphilous			X			
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal		X	X			
	Oligothermal	X					
	Stenothermal						
	Metathermal	X					
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous	X					
	Rheobiontic			X			
General Habitat	Lake						(83) 1281-1400' el
	Pond						
	River						
	Stream	X	X	X			
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emer-gence	Winter						
	Spring	X			X	X	
	Summer				X	X	
	Autumn						
Feeding	Predator	X					
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.	(19) 0.1-0.4 ppm D.O.C. 170 ppm bicarb.						

Sweltsa nanina (Banks)

Parameters		References	Notes
		104	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Sweltsa occidens (Frison)

Parameters		References 72	102	110	112	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					(72,102,110) high el
	Pond					
	River					
	Stream	X	X	X	X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring					
	Summer		X	X	X	
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Sweltsa onkos (Ricker)

Parameters		40	41	74	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous	X			
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal	X	X		
	Stenothermal				
	Metathermal	X	X		
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream	X	X		
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring	X	X	X	
	Summer			X	
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.	(40) 162-234 ppm $CaCO_3$ alkalinity 222-320 ppm hardness 395-600 µmhos conductivity				

Sweltsa oregonensis (Frison)

Parameters		23	72	102	110	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal					
	Oligothermal		X			
	Stenothermal					
	Metathermal					
	Eurythermal					
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					(72) low el
	Pond					
	River		X		X	
	Stream	X		X		
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring			X	X	
	Summer	X		X	X	
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Sweltsa pacifica (Banks)

Parameters		72	100	102	103	104	110	112	Notes
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous								
	Alkalibiontic								
	Indifferent								
Nutrient	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous								
	Mesoxyphilous								
	Oligoxyphilous								
Temperature	Euthermal								
	Mesothermal	X							
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal	X							
Turbidity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
General Habitat	Lake								(72,110) low el
	Pond								(100) 1000' el
	River	X		X			X	X	
	Stream	X		X			X	X	
	Other								
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic								
Emergence	Winter								
	Spring		X	X		X	X	X	
	Summer		X	X	X	X	X	X	
	Autumn								
Feeding	Predator								
	Herbivore								
	Omnivore								
	Scavenger								
Other Water Chemistry, Toxicity, Misc.	(103,104) *A. spatulata* is a synonym.								

Sweltsa pilosa (Needham & Claassen)

Parameters		References: 98	104	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			(98) 9200-11600' el
	Pond			
	River			
	Stream	X		
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter			
	Spring			
	Summer		X	
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Sweltsa revelstoka (Jewett)

Parameters		References 72	102	110	112	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
Turbidity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					(102) high el (110) 5000' el
	Pond					
	River					
	Stream	X	X	X	X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emergence	Winter					
	Spring					
	Summer		X	X	X	
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.	(72,110) given as *S. fidelis*					

Sweltea tamalpa (Ricker)

Parameters		References	Notes
		100	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		(100) 1000' el
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Sweltsa townesi (Ricker)

Parameters		References 80	References 100	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous	X		
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			(80) 1900 m el (100) 6000' el
	Pond			
	River			
	Stream	X		
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring			
	Summer	X	X	
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity			

Taenionema californicum (Needham & Claassen)

Parameters		References 100	103	104	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous		X		
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream				
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter		X	X	
	Spring	X	X	X	
	Summer				
	Autumn				
Feeding	Predator				
	Herbivore		X		
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Taenionema grinnelli (Banks)

Parameters		References: 100	References: 104	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream			
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter			
	Spring	X	X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Taenionema nigripenne (Banks)

Parameters		36	64	69	72	85	100	102	109	110	111	112	117	118	122	Notes
pH	Acidobiontic															
	Acidophilous															
	Neutral								X							
	Alkaliphilous	X														
	Alkalibiontic															
	Indifferent															
Nutri-ent	Eutrophic															
	Mesotrophic															
	Oligotrophic															
	Dystrophic															
Organ-ics	Saprophilic															
	Facultative															
	Saproxenous															
	Saprophobic															
O_2	Euoxyphilous								X							(36,117,118)
	Mesoxyphilous	X											X	X		2.3 mg/l O_2-4 days-60% surv
	Oligoxyphilous															see below
Tempera-ture	Euthermal															
	Mesothermal								X	X						(117,118)
	Oligothermal	X							X	X					X	14.5°C-5 days-50%
	Stenothermal															surv
	Metathermal															
	Eurythermal								X	X					X	
Turbid-ity	Eulichtophilous															
	Mesolichtophilous															
	Polylichtophilous															
	Oligolichtophilous															
Current	Limnobiontic															
	Limnophilous															
	Indifferent															
	Rheophilous															
	Rheobiontic			X												
General Habitat	Lake															(64) 5000-8500' el
	Pond															(69) 3000' el
	River							X	X	X	X	X				(85) 6900' el
	Stream	X		X	X			X	X	X	X	X				(100) 7000-9000' el
	Other															see below
Specific Habitat	Epibenthic															
	Embenthic															
	Epipelic															
	Episabulic															
	Epilithic															
	Epixylous															
	Epiphytic															
Emer-gence	Winter						X		X							
	Spring		X				X	X	X	X	X	X				
	Summer		X						X			X				
	Autumn															
Feeding	Predator															
	Herbivore															
	Omnivore															
	Scavenger															

Other Water Chemistry, Toxicity, Misc.

General Habitat (continued)

(109) 6250-9250' el
(110) to 2000' el
(122) 198,152,68 m el

O_2 (continued)

(36,117,118) 3.7 mg/l O_2-9 days-20% surv

Taenionema oregonense (Needham & Claassen)

Parameters		References		Notes
		102	104	
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River	X		
	Stream	X		
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter	X	X	
	Spring	X		
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Taenionema pacificum (Banks)

Parameters		29	54	55	69	72	98	100	102	104	108	109	110	111	112	Notes
pH	Acidobiontic															
	Acidophilous															
	Neutral											X				
	Alkaliphilous	X														
	Alkalibiontic															
	Indifferent															
Nutri-ent	Eutrophic															
	Mesotrophic															
	Oligotrophic															
	Dystrophic															
Organ-ics	Saprophilic															
	Facultative															
	Saproxenous															
	Saprophobic															
O_2	Euoxyphilous											X				
	Mesoxyphilous															
	Oligoxyphilous															
Tempera-ture	Euthermal															
	Mesothermal	X										X				
	Oligothermal											X				
	Stenothermal															
	Metathermal	X														
	Eurythermal											X				
Turbid-ity	Eulichtophilous															
	Mesolichtophilous	X											X			
	Polylichtophilous															
	Oligolichtophilous															
Current	Limnobiontic															
	Limnophilous															
	Indifferent															
	Rheophilous															
	Rheobiontic			X												
General Habitat	Lake															(29) 5500-5900' el
	Pond															(54) 6800-8800' el
	River	X		X	X	X			X			X	X	X	X	(72) low el
	Stream													X	X	(98) 8500-10600' el
	Other															see below
Specific Habitat	Epibenthic															
	Embenthic															
	Epipelic															
	Episabulic															
	Epilithic				X											
	Epixylous															
	Epiphytic															
Emer-gence	Winter							X	X	X	X	X		X	X	
	Spring	X						X	X	X	X	X	X	X	X	
	Summer	X								X	X	X			X	
	Autumn															
Feeding	Predator															
	Herbivore										X					
	Omnivore															
	Scavenger															

Other Water Chemistry, Toxicity, Misc.

General Habitat (continued)

(100) 7200' el
(109) 5750-9000' el

(98) *T. analis* is a synonym.

Taenionema pallidum (Banks)

Parameters		54	55	69	100	102	104	110	111	112	Notes
pH	Acidobiontic										
	Acidophilous										
	Neutral										
	Alkaliphilous										
	Alkalibiontic										
	Indifferent										
Nutrient	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Organics	Saprophilic										
	Facultative										
	Saproxenous										
	Saprophobic										
O_2	Euoxyphilous										
	Mesoxyphilous										
	Oligoxyphilous										
Temperature	Euthermal										
	Mesothermal							X			
	Oligothermal							X			
	Stenothermal										
	Metathermal										
	Eurythermal										
Turbidity	Eulichtophilous							X			
	Mesolichtophilous							X			
	Polylichtophilous										
	Oligolichtophilous										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic			X							
General Habitat	Lake										(54) <8500' el (100) 8000' el (110) to 3500' el
	Pond										
	River		X			X		X	X	X	
	Stream			X		X		X	X	X	
	Other										
Specific Habitat	Epibenthic										
	Embenthic										
	Epipelic										
	Episabulic										
	Epilithic										
	Epixylous										
	Epiphytic										
Emergence	Winter										
	Spring					X	X	X	X	X	
	Summer				X		X	X	X	X	
	Autumn										
Feeding	Predator										
	Herbivore										
	Omnivore										
	Scavenger										
Other Water Chemistry, Toxicity, Misc.	(104,110) *T. banksii* and *T. kincaidi* are synonyms.										

Taenionema raynorium (Claassen)

	Parameters	80	100	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous	X		
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			(80) 1900 m el
	Pond			(100) 7200' el
	River			
	Stream	X		
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emer-gence	Winter			
	Spring	X	X	
	Summer	X	X	
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity			

Taenionema vanduzeeum (Claassen)

Parameters		References	Notes
		100	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		(100) 7000' el
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Taeniopteryx burksi Ricker & Ross

Parameters		25	42	87	94	99	101	104	113	114	115	Notes
pH	Acidobiontic											
	Acidophilous											
	Neutral											
	Alkaliphilous	X	X									
	Alkalibiontic											
	Indifferent											
Nutri-ent	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Organ-ics	Saprophilic											
	Facultative											
	Saproxenous								X	X		
	Saprophobic											
O_2	Euoxyphilous	X										
	Mesoxyphilous											
	Oligoxyphilous											
Tempera-ture	Euthermal											
	Mesothermal									X		
	Oligothermal	X	X									
	Stenothermal											
	Metathermal	X	X									
	Eurythermal											
Turbid-ity	Eulichtophilous											
	Mesolichtophilous											
	Polylichtophilous										X	
	Oligolichtophilous											
Current	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous			X	X					X		
	Rheobiontic											
General Habitat	Lake											
	Pond											
	River					X						
	Stream	X	X	X		X	X			X	X	
	Other											
Specific Habitat	Epibenthic											
	Embenthic											(42,87,114) debris
	Epipelic											
	Episabulic											(99,101,1[illegible] leaf packs
	Epilithic											
	Epixylous											
	Epiphytic			X	X		X		X	X		
Emer-gence	Winter	X		X	X	X		X		X		(99,113,114) diatoms
	Spring		X				X	X	X	X		
	Summer											
	Autumn											
Feeding	Predator						X					
	Herbivore					X			X	X		
	Omnivore											
	Scavenger								X	X		

Other Water Chemistry, Toxicity, Misc.

(42) 162-232 ppm $CaCO_3$ alkalinity
226-288 ppm $CaCO_3$ hardness
395-502 µmhos conductivity

T. nivalis and *T. maura* (in part) are synonyms.

Taeniopteryx lita Frison

Parameters		87	114	115	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous				
	Mesolichtophilous				
	Polylichtophilous			X	
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous	X			
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River				
	Stream	X		X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter		X		
	Spring				
	Summer				
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Taeniopteryx lonicera Ricker & Ross

Parameters		References 114	115	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutri-ent	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organ-ics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Tempera-ture	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbid-ity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous		X	
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent	X		
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			
	Pond			
	River			
	Stream		X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			(114) debris
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic	X		
Emer-gence	Winter	X		
	Spring			
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Taeniopteryx maura (Pictet)

Parameters		References																Notes
		5	6	14	15	16	28	30	68	75	77	90	103	104	113	114	115	
pH	Acidobiontic																	
	Acidophilous															X		(5) TL_m^{96} = pH 3.25
	Neutral	X	X									X						
	Alkaliphilous						X		X	X								100% surv pH 7, 0% surv pH 2
	Alkalibiontic																	
	Indifferent																	(6) TL_m^{30} = pH 3.71
Nutrient	Eutrophic																	
	Mesotrophic																	
	Oligotrophic																	
	Dystrophic																	
Organics	Saprophilic																	
	Facultative						X											
	Saproxenous														X	X		
	Saprophobic			X						X								
O_2	Euoxyphilous	X	X						X	X								
	Mesoxyphilous																	(6) 8.47-8.70 mg/l O_2
	Oligoxyphilous																	
Temperature	Euthermal																	
	Mesothermal		X				X			X		X				X		(68) TL_m^{96} = 21°C
	Oligothermal	X																
	Stenothermal																	
	Metathermal	X					X											
	Eurythermal		X							X								
Turbidity	Eulichtophilous																	
	Mesolichtophilous															X		
	Polylichtophilous																X	
	Oligolichtophilous																	
Current	Limnobiontic																	
	Limnophilous																	
	Indifferent																	
	Rheophilous												X			X		
	Rheobiontic			X		X												
General Habitat	Lake																	
	Pond																	
	River																	
	Stream	X	X	X	X	X	X			X						X	X	
	Other																	
Specific Habitat	Epibenthic																	
	Embenthic																	
	Epipelic																	
	Episabulic																	
	Epilithic																	(113) leaf packs
	Epixylous																	(114) debris
	Epiphytic														X	X		
Emergence	Winter											X	X	X		X		
	Spring												X	X	X	X		
	Summer																	(113,114) diatoms
	Autumn																	
Feeding	Predator			X	X						X							
	Herbivore												X		X	X		
	Omnivore																	
	Scavenger										X				X	X		

Other Water Chemistry, Toxicity, Misc.

(68) 40 ppm t. alkalinity
35-40 ppm $CaCO_3$ t. hardness

(90) 8 ppm m.o. alkalinity
0 ppm p. alkalinity
3.5 ppm CO_2

T. nivalis (in part) is a synonym.

Taeniopteryx nivalis (Fitch)

Parameters		13	42	61	75	77	100	102	103	104	Notes
pH	Acidobiontic										
	Acidophilous										
	Neutral	X		X							
	Alkaliphilous		X		X						
	Alkalibiontic										
	Indifferent										
Nutrient	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Organics	Saprophilic										
	Facultative										
	Saproxenous										
	Saprophobic				X						
O_2	Euoxyphilous	X			X						(13) 5-11 ppm O_2, 80-95% sat
	Mesoxyphilous										
	Oligoxyphilous										
Temperature	Euthermal										
	Mesothermal				X						
	Oligothermal	X	X	X							
	Stenothermal										
	Metathermal	X									
	Eurythermal		X	X	X						
Turbidity	Eulichtophilous										
	Mesolichtophilous										
	Polylichtophilous										
	Oligolichtophilous										
Current	Limnobiontic										
	Limnophilous										
	Indifferent	X									
	Rheophilous								X		
	Rheobiontic										
General Habitat	Lake										
	Pond										
	River							X			
	Stream	X	X	X	X			X			
	Other										
Specific Habitat	Epibenthic										
	Embenthic										
	Epipelic										
	Episabulic										
	Epilithic										
	Epixylous										
	Epiphytic										
Emergence	Winter			X			X	X	X	X	
	Spring		X	X					X	X	
	Summer										
	Autumn										
Feeding	Predator					X					
	Herbivore								X		
	Omnivore		X								(42) detritus
	Scavenger					X					

Other Water Chemistry, Toxicity, Misc.

(42) 162-232 ppm $CaCO_3$ alkalinity
226-288 ppm $CaCO_3$ hardness
395-502 μmhos conductivity

(61) 14-18 ppm $CaCO_3$ alkalinity

T. maura (in part) a synonym.

Taeniopteryx parvula Banks

Parameters		77	94	96	99	101	103	104	Notes
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous								
	Alkalibiontic								
	Indifferent								
Nutri-ent	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organ-ics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous								
	Mesoxyphilous								
	Oligoxyphilous								
Tempera-ture	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
Turbid-ity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous						X		
	Rheobiontic								
General Habitat	Lake								
	Pond								
	River					X			
	Stream			X					
	Other								
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic		X						
Emer-gence	Winter		X		X		X	X	
	Spring			X	X	X	X	X	
	Summer								
	Autumn								
Feeding	Predator								
	Herbivore						X		
	Omnivore								
	Scavenger	X							
Other Water Chemistry, Toxicity, Misc.									

Taeniopteryx starki Stewart & Szczytko

Parameters		References																									Notes
		114																									
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										
	Pond																										
	River																										
	Stream																										
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter	X																									
	Spring																										
	Summer																										
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger																										
Other Water Chemistry, Toxicity, Misc.																											

Triznaka diversa (Frison)

Parameters		72	85	100	102	108	109	110	111	112	Notes
pH	Acidobiontic										
	Acidophilous										
	Neutral										
	Alkaliphilous										
	Alkalibiontic										
	Indifferent										
Nutri-ent	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Organ-ics	Saprophilic										
	Facultative										
	Saproxenous										
	Saprophobic										
O_2	Euoxyphilous										
	Mesoxyphilous										
	Oligoxyphilous										
Tempera-ture	Euthermal										
	Mesothermal										
	Oligothermal	X									
	Stenothermal										
	Metathermal										
	Eurythermal										
Turbid-ity	Eulichtophilous										
	Mesolichtophilous										
	Polylichtophilous										
	Oligolichtophilous										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic										
General Habitat	Lake										(72) low el
	Pond										(85) 9700' el
	River	X						X			(100) 7000' el
	Stream				X		X	X	X	X	(109) 6750' el
	Other										
Specific Habitat	Epibenthic										
	Embenthic										
	Epipelic										
	Episabulic										
	Epilithic										
	Epixylous										
	Epiphytic										
Emer-gence	Winter										
	Spring				X	X	X	X	X	X	
	Summer			X	X	X	X		X	X	
	Autumn										
Feeding	Predator										
	Herbivore										
	Omnivore										
	Scavenger										
Other Water Chemistry, Toxicity, Misc.											

Triznaka pintada (Ricker)

Parameters		30	54	55	100	102	109	111	112	Notes
pH	Acidobiontic									
	Acidophilous									
	Neutral									
	Alkaliphilous						X			
	Alkalibiontic									
	Indifferent									
Nutri-ent	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Organ-ics	Saprophilic									
	Facultative									
	Saproxenous									
	Saprophobic									
O_2	Euoxyphilous						X			
	Mesoxyphilous									
	Oligoxyphilous									
Tempera-ture	Euthermal									
	Mesothermal									
	Oligothermal	X					X			
	Stenothermal									
	Metathermal						X			
	Eurythermal									
Turbid-ity	Eulichtophilous									
	Mesolichtophilous									
	Polylichtophilous									
	Oligolichtophilous									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Lake									(30) >5900' el
	Pond									(54) 7500-8500' el
	River						X			(55) 8000' el
	Stream			X		X	X	X		(109) 6500-8000' el
	Other						X			see below
Specific Habitat	Epibenthic									
	Embenthic									
	Epipelic									
	Episabulic									
	Epilithic									
	Epixylous									
	Epiphytic									
Emer-gence	Winter									
	Spring				X	X		X	X	
	Summer				X	X	X	X	X	
	Autumn									
Feeding	Predator									
	Herbivore									
	Omnivore									
	Scavenger									

Other Water Chemistry, Toxicity, Misc.

General Habitat (continued)

(109) temporary str

Triznaka signata (Banks)

Parameters		30	54	55	85	98	104	108	109	111	112	Notes
pH	Acidobiontic											
	Acidophilous											
	Neutral											
	Alkaliphilous								X			
	Alkalibiontic											
	Indifferent											
Nutri- ent	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Organ- ics	Saprophilic											
	Facultative											
	Saproxenous											
	Saprophobic											
O_2	Euoxyphilous								X			
	Mesoxyphilous											
	Oligoxyphilous											
Tempera- ture	Euthermal											
	Mesothermal								X			
	Oligothermal								X			
	Stenothermal											
	Metathermal											
	Eurythermal								X			
Turbid- ity	Eulichtophilous											
	Mesolichtophilous											
	Polylichtophilous											
	Oligolichtophilous											
Current	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous			X								
	Rheobiontic			X								
General Habitat	Lake											(54) 7200-9100' el
	Pond											(55) <8000' el
	River			X					X	X	X	(85) 7870' el
	Stream	X		X					X	X	X	(98) 5800-8900' el
	Other			X					X			see below
Specific Habitat	Epibenthic											
	Embenthic											
	Epipelic											
	Episabulic											
	Epilithic											
	Epixylous											
	Epiphytic											
Emer- gence	Winter											
	Spring						X	X	X	X	X	
	Summer						X	X	X	X	X	
	Autumn											
Feeding	Predator											
	Herbivore											
	Omnivore											
	Scavenger											

Other Water Chemistry, Toxicity, Misc.

General Habitat (continued)

(109) 6000-9250' el

(55,109) temporary str

Utacapnia columbiana (Claassen)

Parameters		72	100	102	104	108	110	112	Notes
pH	Acidobiontic								
	Acidophilous								
	Neutral								
	Alkaliphilous								
	Alkalibiontic								
	Indifferent								
Nutri-ent	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Organ-ics	Saprophilic								
	Facultative								
	Saproxenous								
	Saprophobic								
O_2	Euoxyphilous								
	Mesoxyphilous								
	Oligoxyphilous								
Tempera-ture	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
Turbid-ity	Eulichtophilous								
	Mesolichtophilous								
	Polylichtophilous								
	Oligolichtophilous								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
General Habitat	Lake								(72) low elev (100) 6800' el
	Pond								
	River	X		X			X	X	
	Stream			X					
	Other								
Specific Habitat	Epibenthic								
	Embenthic								
	Epipelic								
	Episabulic								
	Epilithic								
	Epixylous								
	Epiphytic								
Emer-gence	Winter		X	X		X			
	Spring		X	X	X	X	X	X	
	Summer								
	Autumn								
Feeding	Predator								
	Herbivore								
	Omnivore								
	Scavenger					X			
Other Water Chemistry, Toxicity, Misc.									

Utacapnia distincta (Frison)

Parameters		References	Notes
		112	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River	X	
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter	X	
	Spring	X	
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Utacapnia lemoniana (Nebeker & Gaufin)

Parameters		References 109	References 111	Notes
pH	Acidobiontic			
	Acidophilous			
	Neutral			
	Alkaliphilous			
	Alkalibiontic			
	Indifferent			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Organics	Saprophilic			
	Facultative			
	Saproxenous			
	Saprophobic			
O_2	Euoxyphilous			
	Mesoxyphilous			
	Oligoxyphilous			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
Turbidity	Eulichtophilous			
	Mesolichtophilous			
	Polylichtophilous			
	Oligolichtophilous			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Lake			(109) 7500' el
	Pond			(111) high el
	River		X	
	Stream	X	X	
	Other			
Specific Habitat	Epibenthic			
	Embenthic			
	Epipelic			
	Episabulic			
	Epilithic			
	Epixylous			
	Epiphytic			
Emergence	Winter	X	X	
	Spring	X	X	
	Summer			
	Autumn			
Feeding	Predator			
	Herbivore			
	Omnivore			
	Scavenger			
Other Water Chemistry, Toxicity, Misc.				

Utacapnia logana (Nebeker & Gaufin)

Parameters		54	55	64	109	111	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous				X		
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous				X		
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal						
	Oligothermal				X		
	Stenothermal						
	Metathermal				X		
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic		X				
General Habitat	Lake						(54) <8500' el
	Pond						(55) <8000' el
	River		X		X	X	(109) 7000-8000' el
	Stream		X		X	X	
	Other				X		(109) temporary str
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emer-gence	Winter			X	X	X	
	Spring			X	X	X	
	Summer						
	Autumn					X	
Feeding	Predator						
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Utacapnia poda (Nebeker & Gaufin)

Parameters		54	55	109	112	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous			X		
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous			X		
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal			X		
	Oligothermal			X		
	Stenothermal					
	Metathermal					
	Eurythermal			X		
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic		X			
General Habitat	Lake					(54) <8500' el
	Pond					(55) <8000' el
	River		X	X	X	(109) 6000-7500' el
	Stream		X	X	X	(109) temporary str
	Other			X		
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter				X	
	Spring			X	X	
	Summer					
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Utacapnia sierra (Nebeker & Gaufin)

Parameters		References	Notes
		80	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous	X	
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		(80) 1900 m el
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity		

Utacapnia trava (Nebeker & Gaufin)

Parameters		References																									Notes
		108	112																								
pH	Acidobiontic																										
	Acidophilous																										
	Neutral																										
	Alkaliphilous																										
	Alkalibiontic																										
	Indifferent																										
Nutrient	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organics	Saprophilic																										
	Facultative																										
	Saproxenous																										
	Saprophobic																										
O_2	Euoxyphilous																										
	Mesoxyphilous																										
	Oligoxyphilous																										
Temperature	Euthermal																										
	Mesothermal																										
	Oligothermal																										
	Stenothermal																										
	Metathermal																										
	Eurythermal																										
Turbidity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic																										
General Habitat	Lake																										(112) 3500-5500' el
	Pond																										
	River		X																								
	Stream		X																								
	Other																										
Specific Habitat	Epibenthic																										
	Embenthic																										
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic																										
Emergence	Winter	X	X																								
	Spring	X	X																								
	Summer		X																								
	Autumn																										
Feeding	Predator																										
	Herbivore																										
	Omnivore																										
	Scavenger	X																									
Other Water Chemistry, Toxicity, Misc.																											

Utaperla sopladora Ricker

Parameters		30	102	111	112	Notes
pH	Acidobiontic					
	Acidophilous					
	Neutral					
	Alkaliphilous					
	Alkalibiontic					
	Indifferent					
Nutri-ent	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Organ-ics	Saprophilic					
	Facultative					
	Saproxenous					
	Saprophobic					
O_2	Euoxyphilous					
	Mesoxyphilous					
	Oligoxyphilous					
Tempera-ture	Euthermal					
	Mesothermal					
	Oligothermal	X				
	Stenothermal					
	Metathermal					
	Eurythermal					
Turbid-ity	Eulichtophilous					
	Mesolichtophilous					
	Polylichtophilous					
	Oligolichtophilous					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Lake					(30) >6400' el
	Pond					
	River			X		
	Stream		X		X	
	Other					
Specific Habitat	Epibenthic					
	Embenthic					
	Epipelic					
	Episabulic					
	Epilithic					
	Epixylous					
	Epiphytic					
Emer-gence	Winter					
	Spring		X	X	X	
	Summer		X	X	X	
	Autumn					
Feeding	Predator					
	Herbivore					
	Omnivore					
	Scavenger					
Other Water Chemistry, Toxicity, Misc.						

Visoka cataractae (Neave)

Parameters		72	100	102	110	112	Notes
pH	Acidobiontic						
	Acidophilous						
	Neutral						
	Alkaliphilous						
	Alkalibiontic						
	Indifferent						
Nutri-ent	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Organ-ics	Saprophilic						
	Facultative						
	Saproxenous						
	Saprophobic						
O_2	Euoxyphilous						
	Mesoxyphilous						
	Oligoxyphilous						
Tempera-ture	Euthermal						
	Mesothermal						
	Oligothermal	X					
	Stenothermal						
	Metathermal						
	Eurythermal						
Turbid-ity	Eulichtophilous						
	Mesolichtophilous						
	Polylichtophilous						
	Oligolichtophilous						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Lake						(72) >1500 m el
	Pond						
	River						
	Stream	X		X	X	X	
	Other						
Specific Habitat	Epibenthic						
	Embenthic						
	Epipelic						
	Episabulic						
	Epilithic						
	Epixylous						
	Epiphytic						
Emer-gence	Winter		X				
	Spring		X	X	X	X	
	Summer				X	X	
	Autumn						
Feeding	Predator						
	Herbivore						
	Omnivore						
	Scavenger						
Other Water Chemistry, Toxicity, Misc.							

Yoraperla brevis (Banks)

Parameters		11	65	72	80	100	102	104	110	112	122	Notes
pH	Acidobiontic											
	Acidophilous											
	Neutral											
	Alkaliphilous				X							
	Alkalibiontic											
	Indifferent											
Nutri-ent	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Organ-ics	Saprophilic											
	Facultative											
	Saproxenous											
	Saprophobic											
O_2	Euoxyphilous											
	Mesoxyphilous											
	Oligoxyphilous											
Tempera-ture	Euthermal											
	Mesothermal	X										
	Oligothermal		X						X		X	
	Stenothermal											
	Metathermal	X									X	
	Eurythermal											
Turbid-ity	Eulichtophilous								X			
	Mesolichtophilous											
	Polylichtophilous											
	Oligolichtophilous											
Current	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous											
	Rheobiontic		X								X	
General Habitat	Lake											(80) 1900 m el
	Pond											(72) low el
	River								X			(122) 198,213 m el
	Stream	X	X	X	X	X	X		X	X	X	
	Other											
Specific Habitat	Epibenthic											
	Embenthic											
	Epipelic											
	Episabulic											
	Epilithic											
	Epixylous								X			(110) woody debris
	Epiphytic								X			
Emer-gence	Winter											
	Spring					X	X		X	X	X	
	Summer				X	X	X	X	X	X	X	
	Autumn											
Feeding	Predator											
	Herbivore	X										
	Omnivore											
	Scavenger											
Other Water Chemistry, Toxicity, Misc.	(80) 30-75 ppm m.o. alkalinity											

Yoraperla mariana (Ricker)

Parameters		102	110	112	Notes
pH	Acidobiontic				
	Acidophilous				
	Neutral				
	Alkaliphilous				
	Alkalibiontic				
	Indifferent				
Nutri-ent	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Organ-ics	Saprophilic				
	Facultative				
	Saproxenous				
	Saprophobic				
O_2	Euoxyphilous				
	Mesoxyphilous				
	Oligoxyphilous				
Tempera-ture	Euthermal				
	Mesothermal				
	Oligothermal		X		
	Stenothermal				
	Metathermal				
	Eurythermal				
Turbid-ity	Eulichtophilous		X		
	Mesolichtophilous				
	Polylichtophilous				
	Oligolichtophilous				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Lake				
	Pond				
	River		X		
	Stream	X	X	X	
	Other				
Specific Habitat	Epibenthic				
	Embenthic				
	Epipelic				
	Episabulic				
	Epilithic				
	Epixylous				
	Epiphytic				
Emer-gence	Winter				
	Spring	X	X	X	
	Summer	X		X	
	Autumn				
Feeding	Predator				
	Herbivore				
	Omnivore				
	Scavenger				
Other Water Chemistry, Toxicity, Misc.					

Yugus bulbosus (Frison)

	Parameters	95	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral	X	
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous	X	
	Mesoxyphilous	X	
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal	X	
	Oligothermal	X	
	Stenothermal		
	Metathermal		
	Eurythermal	X	
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		(95) 700-1014 m el
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter		
	Spring		
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore	X	
	Scavenger		
Other Water Chemistry, Toxicity, Misc.	(95) 10 ppm $CaCO_3$ alkalinity 8.7-17.6 µmhos conductivity 4.05-9.84 mg/l t. phosphorus		

Zapada cinctipes (Banks)

Parameters		References																									Notes
		4	8	13	23	30	36	38	54	55	64	70	72	80	85	100	102	104	108	109	110	111	112	117	118	122	
pH	Acidobiontic																										
	Acidophilous																										
	Neutral			X																							
	Alkaliphilous						X							X													
	Alkalibiontic																										
	Indifferent																										
Nutri-ent	Eutrophic																										
	Mesotrophic																										
	Oligotrophic																										
	Dystrophic																										
Organ-ics	Saprophilic																										
	Facultative																										
	Saproxenous							X																			
	Saprophobic																										
O_2	Euoxyphilous			X				X																			(13) 5-11 ppm O_2, 50-95% sat see below
	Mesoxyphilous			X																				X	X		
	Oligoxyphilous																										
Tempera-ture	Euthermal																										
	Mesothermal						X						X														
	Oligothermal	X	X	X				X				X	X													X	
	Stenothermal																										
	Metathermal	X		X								X	X													X	
	Eurythermal																										
Turbid-ity	Eulichtophilous																										
	Mesolichtophilous																										
	Polylichtophilous																										
	Oligolichtophilous																										
Current	Limnobiontic																										
	Limnophilous																										
	Indifferent																										
	Rheophilous																										
	Rheobiontic			X						X		X															
General Habitat	Lake																										(54) <8500' el
	Pond																										(55) <8000' el
	River									X			X							X							(72) low el
	Stream	X	X	X	X	X	X	X		X		X	X	X			X			X	X	X	X			X	(80) 1900 m el
	Other																										see below
Specific Habitat	Epibenthic																										
	Embenthic																										(30) detritus, leaf packs
	Epipelic																										
	Episabulic																										
	Epilithic																										
	Epixylous																										
	Epiphytic					X		X																			
Emer-gence	Winter			X				X			X			X		X	X	X	X	X		X	X			X	
	Spring	X	X	X	X			X			X	X		X		X	X	X	X	X	X	X	X			X	
	Summer				X			X				X		X			X			X		X	X				
	Autumn							X																			
Feeding	Predator																										
	Herbivore																		X								
	Omnivore																										
	Scavenger																										

Other Water Chemistry, Toxicity, Misc.

O_2 (continued)

(36,117,118) TL_m^{96} = 3.3 mg/l O_2, 29% sat

General Habitat (continued)

(85) 6900-9700' el
(109) 6750-9250' el
(122) 68,152,198,213 m el

(13) 0.1-0.6 ppm phosphate
(80) 30-75 ppm m.o. alkalinity

Zapada columbiana (Claassen)

Parameters		2	8	64	70	72	80	100	102	104	108	110	111	112	Notes
pH	Acidobiontic														
	Acidophilous														
	Neutral														
	Alkaliphilous						X								
	Alkalibiontic														
	Indifferent														
Nutri-ent	Eutrophic														
	Mesotrophic														
	Oligotrophic														
	Dystrophic														
Organ-ics	Saprophilic														
	Facultative														
	Saproxenous														
	Saprophobic														
O_2	Euoxyphilous														
	Mesoxyphilous														
	Oligoxyphilous														
Tempera-ture	Euthermal														
	Mesothermal														
	Oligothermal		X		X										
	Stenothermal														
	Metathermal				X										
	Eurythermal														
Turbid-ity	Eulichtophilous														
	Mesolichtophilous														
	Polylichtophilous														
	Oligolichtophilous														
Current	Limnobiontic														
	Limnophilous														
	Indifferent														
	Rheophilous														
	Rheobiontic				X										
General Habitat	Lake														(8) 1605-2280 m el
	Pond														(72) mid-high el
	River								X				X	X	(80) 1900 m el
	Stream		X		X	X	X		X			X	X	X	(100) 6000-10000' el
	Other	X													see below
Specific Habitat	Epibenthic														
	Embenthic														
	Epipelic														
	Episabulic														
	Epilithic														
	Epixylous														
	Epiphytic														
Emer-gence	Winter			X			X								
	Spring		X	X	X		X		X			X	X	X	
	Summer							X	X	X					
	Autumn						X								
Feeding	Predator														
	Herbivore										X				
	Omnivore														
	Scavenger														

Other Water Chemistry, Toxicity, Misc.

General Habitat (continued)

(110) high elev

(2) seep

(80) 30-75 ppm m. o. alkalinity

Zapada cordillera (Baumann & Gaufin)

Parameters		References	Notes
		112	
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Zapada frigida (Claassen)

Parameters		23	80	85	100	102	104	110	112	122	Notes
pH	Acidobiontic										
	Acidophilous										
	Neutral										
	Alkaliphilous		X								
	Alkalibiontic										
	Indifferent										
Nutrient	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Organics	Saprophilic										
	Facultative										
	Saproxenous										
	Saprophobic										
O_2	Euoxyphilous										
	Mesoxyphilous										
	Oligoxyphilous										
Temperature	Euthermal										
	Mesothermal										
	Oligothermal									X	
	Stenothermal										
	Metathermal									X	
	Eurythermal										
Turbidity	Eulichtophilous										
	Mesolichtophilous										
	Polylichtophilous										
	Oligolichtophilous										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic										
General Habitat	Lake										
	Pond										(80) 1900 m el
	River					X					(85) 9700' el
	Stream	X	X			X		X	X	X	(100) 6500-9000' el
	Other										(110) >3500' el (122) 213,198,152 m el
Specific Habitat	Epibenthic										
	Embenthic										
	Epipelic										
	Episabulic										
	Epilithic										
	Epixylous										
	Epiphytic										
Emergence	Winter										
	Spring	X	X			X		X	X		
	Summer		X		X	X	X	X	X		
	Autumn										
Feeding	Predator										
	Herbivore										
	Omnivore										
	Scavenger										

Other Water Chemistry, Toxicity, Misc.

(80) 30-75 ppm m.o. alkalinity

Zapada glacier (Baumann & Gaufin)

Parameters		References 112	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic	X	
General Habitat	Lake		(112) glacier-fed, precipitous str
	Pond		
	River		
	Stream	X	
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring		
	Summer	X	
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Zapada haysi (Ricker)

Parameters		References									Notes
		1	8	64	85	100	102	109	111	112	
pH	Acidobiontic										
	Acidophilous										
	Neutral										
	Alkaliphilous										
	Alkalibiontic										
	Indifferent										
Nutri-ent	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Organ-ics	Saprophilic										
	Facultative										
	Saproxenous										
	Saprophobic										
O_2	Euoxyphilous										
	Mesoxyphilous										
	Oligoxyphilous										
Tempera-ture	Euthermal										
	Mesothermal										
	Oligothermal		X								
	Stenothermal										
	Metathermal										
	Eurythermal										
Turbid-ity	Eulichtophilous										
	Mesolichtophilous										
	Polylichtophilous										
	Oligolichtophilous										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic										
General Habitat	Lake										(8) 1605-2280 m el
	Pond										(85) 9700-10560' el
	River						X		X	X	(100) 8500' el
	Stream	X	X				X	X	X	X	(109) 7500' el
	Other										
Specific Habitat	Epibenthic										
	Embenthic										
	Epipelic										
	Episabulic										
	Epilithic										
	Epixylous										
	Epiphytic										
Emer-gence	Winter										
	Spring		X	X			X	X	X	X	
	Summer					X	X	X	X	X	
	Autumn										
Feeding	Predator										
	Herbivore	X									
	Omnivore										
	Scavenger	X									
Other Water Chemistry, Toxicity, Misc.											

Zapada oregonensis (Claassen)

Parameters		23	54	55	70	72	80	100	102	104	109	110	111	112	122	Notes
pH	Acidobiontic															
	Acidophilous															
	Neutral										X					
	Alkaliphilous						X									
	Alkalibiontic															
	Indifferent															
Nutrient	Eutrophic															
	Mesotrophic															
	Oligotrophic										X					
	Dystrophic															
Organics	Saprophilic															
	Facultative															
	Saproxenous															
	Saprophobic															
O_2	Euoxyphilous										X					
	Mesoxyphilous															
	Oligoxyphilous															
Temperature	Euthermal															
	Mesothermal											X				
	Oligothermal				X						X	X			X	
	Stenothermal															
	Metathermal				X						X				X	
	Eurythermal															
Turbidity	Eulichtophilous											X				
	Mesolichtophilous											X				
	Polylichtophilous															
	Oligolichtophilous															
Current	Limnobiontic															
	Limnophilous															
	Indifferent															
	Rheophilous															
	Rheobiontic			X												
General Habitat	Lake															(54) >8500' el
	Pond															(72) all el
	River			X					X		X	X	X	X		(80) 1900 m el
	Stream	X			X	X	X		X		X	X	X	X	X	(100) 3000-10000' el
	Other															see below
Specific Habitat	Epibenthic															
	Embenthic															
	Epipelic															
	Episabulic															
	Epilithic															
	Epixylous															
	Epiphytic															
Emergence	Winter								X		X		X	X		
	Spring	X			X		X		X	X	X	X	X	X		
	Summer						X	X	X	X	X	X	X	X		
	Autumn												X	X		
Feeding	Predator															
	Herbivore															
	Omnivore															
	Scavenger															

Other Water Chemistry, Toxicity, Misc.

General Habitat (continued)

(109) 6750-9250' el
(122) 213,198,152 m el

(80) 30-75 ppm m.o. alkalinity

Zealeustra arnoldi Ricker & Ross

	Parameters	References 114	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbidity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		(114) intermittent str
	Pond		
	River		
	Stream		
	Other	X	
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emergence	Winter	X	
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Zealeuctra claasseni (Frison)

Parameters		75	99	101	103	113	114	Notes
pH	Acidobiontic							
	Acidophilous							
	Neutral							
	Alkaliphilous	X						
	Alkalibiontic							
	Indifferent							
Nutri-ent	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Organ-ics	Saprophilic							
	Facultative							
	Saproxenous							
	Saprophobic	X						
O_2	Euoxyphilous	X						
	Mesoxyphilous							
	Oligoxyphilous							
Tempera-ture	Euthermal							
	Mesothermal	X						
	Oligothermal							
	Stenothermal							
	Metathermal	X						
	Eurythermal							
Turbid-ity	Eulichtophilous							
	Mesolichtophilous							
	Polylichtophilous							
	Oligolichtophilous							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic			X				
General Habitat	Lake							(113) temporary str
	Pond							(114) intermittent str
	River							
	Stream	X	X	X	X	X		
	Other					X	X	
Specific Habitat	Epibenthic							
	Embenthic							(103) leaf packs, vegetation
	Epipelic							
	Episabulic							
	Epilithic			X				
	Epixylous							
	Epiphytic				X			
Emer-gence	Winter		X	X	X		X	
	Spring			X	X	X		
	Summer							
	Autumn						X	
Feeding	Predator							
	Herbivore			X	X			
	Omnivore							
	Scavenger							
Other Water Chemistry, Toxicity, Misc.								

Zealeuctra hitei Ricker & Ross

Parameters		114	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral		
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Lake		
	Pond		(114) intermittent str
	River		
	Stream		
	Other	X	
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		(114) debris
	Epilithic	X	
	Epixylous		
	Epiphytic	X	
Emer-gence	Winter	X	
	Spring	X	
	Summer		
	Autumn	X	
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.			

Zealeuctra narfi Ricker & Ross

Parameters		61	Notes
pH	Acidobiontic		
	Acidophilous		
	Neutral	X	
	Alkaliphilous		
	Alkalibiontic		
	Indifferent		
Nutri-ent	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Organ-ics	Saprophilic		
	Facultative		
	Saproxenous		
	Saprophobic		
O_2	Euoxyphilous		
	Mesoxyphilous		
	Oligoxyphilous		
Tempera-ture	Euthermal		
	Mesothermal		
	Oligothermal	X	
	Stenothermal		
	Metathermal		
	Eurythermal	X	
Turbid-ity	Eulichtophilous		
	Mesolichtophilous		
	Polylichtophilous		
	Oligolichtophilous		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous	X	
	Rheobiontic		
General Habitat	Lake		
	Pond		
	River		
	Stream		
	Other		
Specific Habitat	Epibenthic		
	Embenthic		
	Epipelic		
	Episabulic		
	Epilithic		
	Epixylous		
	Epiphytic		
Emer-gence	Winter		
	Spring	X	
	Summer		
	Autumn		
Feeding	Predator		
	Herbivore		
	Omnivore		
	Scavenger		
Other Water Chemistry, Toxicity, Misc.	(61) 14-18 ppm $CaCO_3$ alkalinity		